ARTISAN

JULY 1958

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. The Magazine of

CENTRAL RESIDENTIAL AIR CONDITIONING

WARM AIR HEATING . SHEET METAL CONTRACTING

STANDARDS ATTRACT PROSPECTS to home show display ... page 36



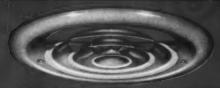
HUME FURNAGE CO

Air Control

BIG
CAPACITY
CEILING
DIFFUSERS



GIVE YOU MORE - FROM ANY ANGLE



BROAD OUTER KING - A BUILT-IN ANTI-SMUDGE RING



Complete range of



NEW "STA-SET" DAMPERS for both models. New concept in design with push-pull red for positive opening and clothing of butterfly valves — special purposed bytes to hold a new position.

MORE FREE AREA. Round models provide 50% more free area than ordinary diffusers. Square models 40% more.

MORE PERFORMANCE FEATURES. Advanced-design Air Flow rings. Broad anti-smudge outer ring *built-in* — not an extra. Self-sealing gaskets. New STA-SET dampers with push-pull rods for positive opening and closing of butterfly valves — no chains to break.

MORE PROFITABLE TO INSTALL. No more need to buy oversize diffusers. These BIG new Air Control models have plenty of capacity to work perfectly on ducts of the same listed size. Timesaving Adjusto-Stop on damper permits balancing system at diffuser face. Smart appearance and superior performance stop those profit-slicing call-backs.

FREE: New '58 catalog showing complete Air Control line — the registers, grilles and diffusers most likely to be copied. See your jobber or write us.

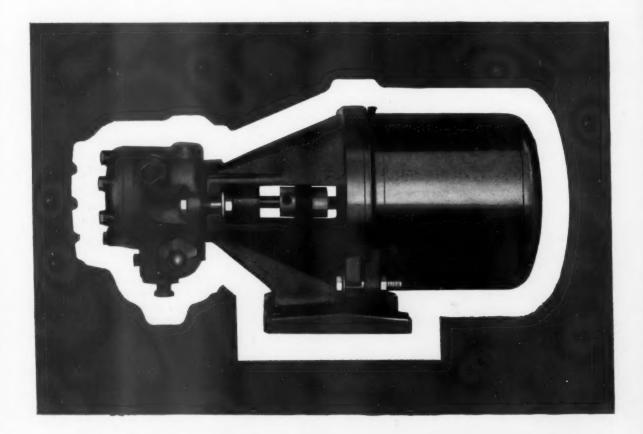
AIR CONTROL PRODUCTS, INC.

158 Center St., Coopersville, Michigan

In Canada:

LEIGH METAL PRODUCTS LTD., 72 York St., London, Ontario

New 30 gph boost pump supplies overhead heaters



Here's a new, compact, pump-motor-bracket assembly developed by Sundstrand to supply No. 2 or lighter oil to one or more overhead heaters or furnaces. It is offered with or without motor in either a Model J single-stage or Model H two-stage pump assembly for use with an elevated auxiliary tank. Delivery rate of the boost pump is 30 gallons of No. 2 fuel oil per hour. Cutoff valve provided as part of the boost pump package acts as a check to prevent loss of supply head to auxiliary tank, assuring quick recovery following shutdown periods. For more details, including installation data, write Sundstrand—ask for Bulletin 1110.



SUNDSTRAND HYDRAULIC DIVISION

of Sundstrand Machine Tool Co., 2210 Harrison Ave., Rockford, Illinois



Eastern Sales Office: 89 Summit Ave., Summit, N. J. Fuel Units Made in Canada by John Inglis, Ltd., 14 Strachan Ave., Toronto; in Sweden by Sundstrand
Hydraulic AB Stockholm; in France by R. S. Stokvis, et Fils, S. A., 20-22 Rue Des Petits-Hotels, Paris.

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RESIDENTIAL AIR CONDITIONING WARM AIR HEATING SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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There's no substitute for knowing your product



Better Business Guide No. 6

SALES SCHOOLING—Mueller Climatrol salesmen are willing and able to conduct local training and sales meetings. Mueller Climatrol presents several "cooling schools" annually, and our Milwaukee facilities are available for special group instruction. Product information presented in these courses helps the salesman deliver a convincing product story.

There's an axiom as old as the art of selling that says "true salesmanship is helping the customer buy." And in few fields does it ring truer than in heating and cooling. The average prospect knows little of the basic equipment, much less its fine points and features. For the salesman who knows his product... and more important, knows how to translate the hard facts into human appeals and benefits—it's a situation that shouts opportunity.

He's Your Ambassador

It's first a matter of winning confidence. Your salesman, remember, is the spokesman for your firm. His ability to explain the merits of your equipment speaks for your ability to install it. No matter how great his persuasive powers, persistence without substance equals nothing. Customers need, want, demand the assurance that they're dealing with professionals.

In this same vein, a product of national reputation is, of course, a major asset.

Know Competition, Too

It's no less important to know your competitors' products — their strengths and soft spots — as well. You must be able to recognize and emphasize your trump features.

But one warning: don't become too technical. To Mrs. Smith, a bonnet is a hat and a duct something that takes to water. Take the trouble to explain, using illustrations or diagrams. And where possible, it's far more effective to dramatize complex features by demonstration,

Background Build-Up

Most manufacturers are more than happy to cooperate with the dealer in sales training programs. Product literature, engineering bulletins. heating and air conditioning schools
— all fill this important need.

Moella Climatrol

And they're all available to the man who sells Mueller Climatrol. If you'd like more information, contact your Mueller Climatrol representative. Or write directly to...

Mueller Climatrol

2030 W. Oklehoma Ave., Milwaukee 1, Wisconsin; Western Zone: 1024 Westminster Avenue, Alhambra, Californie; In Canada: 2490 Bloor Street, West, Teronto 9, Ontario.

DIVISION OF WORTHINGTON CORP.

the editor's notebook

Thumbing Through This Month's Artisan

... we visit a contractor whose Metal Cupola Specialty Keeps Sheet Metal Shop on Full Time Schedule and brings in enough profit to justify moving the business to a more desirable location and erecting a new building with a separate department for production of the cupolas. We consider the conditions which must be met to insure the profit potential of a specialty item, then go over the complete process of fabricating and installing the zincbonded steel cupolas. Finally, we review scheduling, pricing, advertising and selling the attractive products, and note the enthusiasm with which they are received by consumers

Show

... we drop in at an effective display booth where Standards, Check-Lists Produce Modernization Leads at Home Show. We get some pointers on advance promotion, streamlined sales presentation and productive follow-up techniques from a dealer-contractor who uses American Artisan's checklists to announce and arouse interest in the display, and Standards for Rating Heating Systems as the central theme of the exhibit. We find prospects attracted to the booth by arresting displays and signs, led easily into a discussion of proper system performance, shown educational demonstrations and literature and contacted later with well-planned modernization presentations.

Cost

... and we find some answers to the oftenheard question by prospects,





KRUEGER SENTRY GAUGES

the editor's notebook

(Continued)

What Does It Cost to Operate Summer Air Conditioning? We find that the solutions, suggested by results of surveys and studies of actual operating costs reported by Ralph A. Gonzalez, seem to hinge on the human factor, which is virtually the only variable in the tests which are described. We see wide variations in power consumption figures within each of the three groups of test installations, all traceable largely to occupants' habits, and we realize that the question is largely a sales problem which can be relieved by presenting the facts that 1) users seldom complain about operating costs, and 2) owners report that operating costs are offset by other savings.

Diffusers

. . . and we are reminded that Practical Perimeter Heating Jobs Call for Correct Diffuser Placement. Author Guy Voorhees acknowledges that compromises must sometimes be made in perimeter heating modernization jobs due to structural or other limitations, and offers some helpful suggestions for locating and sizing branch ducts and diffusers to do the best job under the existing conditions. We find a supplementary table showing higher branch duct capacities than are published in NWAHACA Manual which are often needed when one duct and diffuser must do the work of two or more; and we study some preferred methods for determining duct capacities for areas with variable heat losses

Congratulates Artisan On Service to Industry

LAST MONTH we published a number of letters from read-

TOCKFORMER CONTROLL OF MONEY MAKING SHEET METAL MACHINERY

SNAP LOCK MACHINE

Designed and priced for the sheet metal shop, fabricates both receiver lock and offset lock for both round and square duct from 24 to 30 gauge material. Snap Lock is made flat with no restrictions on diameter of pipe or size of duct, and work is easily nested and stored for assembly on the job. Reeves type and other snap lock rolls available upon request.



SLITTING ATTACHMENTS

Installed in 10 minutes on any Lockformer 20, 22 or 24, shear 30 to 35 feet per minute from 20 gauge or lighter material—shear as little as ½" or up to 24"—handle any slittling job on sheets as wide as 48". Also available with own power units, with or without floor stand.



EASY EDGER

Turns a ½2" flange on an inside radius as small as 1 ¾" in one operation. No gauges to set. Machine cut steel gears, heat treated rolls. Small, rugged, easily portable and practically indestructible. Furnished with or without stand.



Special rolling machines designed to meet your specific requirements.



LOCKFORMERS

Five different models to choose from, plus the new Super-Speed 20. Capacity through 16 gauge. Standard auxiliary rolls for right angles, double seams, drive cleats, and standing seams.



THE CLEATFORMER

An extremely versatile machine capable of turning out just about every type of cleat needed in any shop. Makes both drive and "S" cleats with no changeover. Single set of auxiliary rolls forms right angle flanges, standing seams and T connections simply by inserting stock in the proper position to a special three way guide furnished with the rolls.



STANDING "S"

Combines a conventional "S" Cleat with a standing seam in one pass through the machine! Particularly adapted where there is need for much greater strength and rigidity than is found in a simple "S" Cleat. Extended shafts provide for other special forming operations.



AUTO-GUIDE POWER

Follows any edge, straight or curved automatically. Just turn up starting flange in convenient table slot, start material through ralls...and let go. Available for Lockformer Models 20, 22 and 24 or mounted on its own power unit, with or without floor stand. Capacity is 20 gauge or lighter.



POWER FLANGERS

Lockformer power flangers are selfgauging. No adjustment necessary to compensate for the various radil, simply hold the metal to the built-in gauge and the flanger automatically follows the contour of the edge being worked. Three models handle wide range of gauges.



Get the complete story. Write for the latest Lockformer catalog.

Manufactured by

The Lockformer Co.
4615 W. ROOSEVELT ROAD
CHICAGO SO, ILLINOIS

the editor's notebook

(Continued)

ers who expressed their points of view on the American Management Institute Audit of the Warm Air Heating Industry. One of the letters we published was written by Harry C. Gurney, General Sales Manager, Janitrol Div., Surface Combustion Corp. After we had gone to press, we received another letter from Mr. Gurney in which he said:

"I had not thought of my letter as being something for publication or I should have been more gracious in giving Artisan credit for the many constructive things it has done for the industry. So, if it is to be published, I would like the following paragraph added:

"In closing, I would be most remiss if I did not express my appreciation for the many fine and constructive things which Artisan has done and is doing to assist the industry."

These words are very much appreciated by American Artisan's staff and we do wish we had been able to add them to Mr. Gurney's original comments.

Passing Along Your American Artisan?

EVERY WEEK I receive letters like this one from E. G. Rees, Heating & Engineering Co., Hamilton, O. Mr. Rees says:

"Gentlemen — Your recent articles on air conditioning are excellent, and not only do I use them for my information, but I give them to my men to help acquaint them with air conditioning problems and engineering."

Letters such as this are gratifying because we realize that our editorials are reaching more than one person at each address. Are you passing your issues of American Artisan along to others in



Quickest and Surest Way to

Use a handy roll of Arno Ductape. It sticks instantly and permanently to any surface. For irregular or difficult-to-reach joints tear the tape off in strips for easy application. Where extra safety against fire hazard is needed use Arno F-R (Flame-Resistant) Ductape.

Arno Ductape comes in 60yard rolls 1, 1½ and 2 inches wide (or wider if needed). Colors are black, tan, olive drab and aluminum gray. It's specially made for duct sealing and other heavy duty jobs.

If you haven't yet tried Arno Ductape ask your jobber or write for a sample roll. You'll like it and the time it saves.

Seal Ducts



Sales Offices

Atlanta—2258 B Cascade Rd. S.W. Chicago—6577 Northwest Highway Denver—1376 Sh Street Detroil—12915 W. Eight Mile Road Fort Worth—228 Tillar Street Los Angeles—3295 East 48th Street Minneapolis—401 Plymouth Ave. North New York—104 West 17th Street



Arno Adhesive Tapes, Inc., 4110 Ohio Street, Michigan City, Indiana

the editor's notebook

(Continued)

your company who can profit by the experience of other dealer-contractors?

Minutes Are Money, Time Analysis Shows

DID YOU ever stop to consider how much money is wasted every year by employees standing around for something? waiting Well, it's quite a bit, even if only five minutes a day are lost. Just glance at the following schedule worked out by the Cincinnati Time Recorder Co. You'll be as amazed as I was to learn that five minutes lost time a day amounts to about a week's pay per year.

Hourly rate	One em- ployee	Five em- ployees
\$1.25	\$ 53.12	\$265.60
1.50	63.75	318.80
1.75	74.38	371.90
2.00	85.00	425.00
2.50	106.25	531.30
3.00	127.50	637.50
Hourly	10 em-	25 em-
rate	ployees	ployees
\$1.25	\$ 531.20	\$1328.00
1.50	637.50	1594.00
1.75	743.80	1859.40
2.00	850.00	2125.00
2.50	1062.50	2656.50
3.00	1275.00	3187.50

Says Service Builds Good Public Relations

CREATING good public relations is an important function of every heating-air conditioning dealer-contractor. I like the way Charles H. Burkhardt, National Secretary, Distribution Div., Oil Heat Institute of America, brought this to the attention of people in the heating service business who attended a recent meeting in Rochester, N.Y. Mr. Burkhardt said:

"To render good service, a dealer-contractor must render efficient service, with



Building's system was designed to a static pressure of 8" water. SOFTITE COp-R-Loy used ranged from 16-gage for ducts over 18" in diameter to 22-gage for 8" or less.

5 miles of high-velocity

trunk lines made of Wheeling sofTite cop-r-Loy Sheets



Because sections were made up in Alpine's shop with short lead time on an "as needed" basis, Wheeling's dependable delivery was a big advantage.

Although it's only three stories tall, Idlewild Airport's new 3,200'-long International Arrival Building has the high-velocity air-distribution system normally associated with skyscrapers. It was selected to minimize the space requirements of trunk lines and ducts in the extremely long structure . . . and to assure the best possible year-round air-conditioning in every part of it.

Using almost 250 tons of 16 to 22 gage Wheeling sofTite Cop-R-Loy Galvanized Sheets, the lines and ducts were fabricated by the Alpine Sheet Metal & Ventilating Co., Long Island City, New York. The company's president is Mr. Marty Langberg, who says, "We knew this was going to be a tough job, so we used sofTite wherever possible. It's more durable, and the coating never chips or cracks."

You, also, can gain by using Wheeling sorTrre Cop-R-Loy Galvanized Sheets in your own air-handling jobs. Get proof from your nearby Wheeling warehouse or sales office. Wheeling Corrugating Company, Wheeling, West Virginia.



WHEELING CORRUGATING COMPANY-IT'S WHEELING STEEL

IMMEDIATE DELIVERY ON ALL STOCKED ITEMS FROM THESE WAREHOUSES: Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis SALES OFFICES: Atlanta, Houston

the editor's notebook

(Continued)

costs being kept under proper management control."

A survey of 200 wellmanaged service departments. Mr. Burkhardt said. "makes it clear that the service department can no longer be regarded as simply an appendage of the sales department, but is - in itself distinct and separate phase which must be operated in accordance with sensible cost practices. A careful cost analysis of service operations is the first step in the process by which the service department becomes a true public relations instrument.

"Once costs are known, the inefficiencies of operation are made evident. If labor costs are too high, something is wrong. If expenditures for parts are out of line, this becomes spotlighted and corrective measures can be taken. An extremely costly service department is almost surely an inefficient department and cannot, by its very nature, be doing a good public relations job."

Home Buyers Want More Than Minimum: FHA

COMMISSIONER Norman P. Mason, Federal Housing Administration, recently said that FHA insists on minimum property standards in order to assure sound construction, economy and good planning. He pointed out, however, that a house built only to its bare minimum standards would lack many features that home buyers usually demand. In a recent study of houses in 14 cities financed with insured mortgages, the FHA found that on the average 371/2 percent of the cost of building houses represented items over and above the FHA minimum property standards. The builders had included these 102 Morton Street



the editor's notebook

(Continued)

additional items to make the houses more attractive to buyers.

If these findings are any measure of the public's desire for better homes, they certainly indicate the need for selling only the best air distribution system possible to design. Here is another use American Artisan's Standards for Rating Heating Systems. Show the builder that people prefer well designed systems that can meet the specifications for the "Good" classification - and thus provide him with another good sales tool. When he finds that the house buying public is interested in houses that can more than meet the FHA minimum requirements, he will realize that he must pay a fair price for his heating system.

Cites Advances in Welding of Aluminum

THE WELDING of aluminum is undergoing big changes these days, getting easier and faster as well as more economical. Three new techniques are about to be made available to industry by the Department of Metallurgical Research of Kaiser Aluminum & Chemical Corp.

One method has been developed to produce consistently high quality welds by reducing porosity and dross. In this process, the welding gun is modified so that a mixture of argon and chlorine can be introduced down the contact tube directly into the inner core of the arc, and thereby eliminate the effects of contaminants. There are no harmful effects upon the operator because the chlorine used represents only a small fraction of 1 percent of the total shielding gas. Minor protective measures insure no corrosion damage to equipment.

FACTS about Baseboard Perimeter Diffusers!

Do you really need <u>long</u> baseboard perimeter diffusers?

Not The Auer "Perfusaire" is only 18" long, but outperforms 4 to 8 foot units, yet has comparable capacity. Why pay more for larger, less effective units. "Perfusaire" has proven it can do a better job.

How does Aver's 18" diffuser do a better job than 4 to 8 foot units?

No other diffuser can match the perfect airpattern of Auer's "Perfusaire". It meets all requirements for air diffusion with low air resistance so maximum throw and spread are achieved. The huge fan-shaped pattern of air heats entire wall surfaces providing even temperatures.

How does Aver accomplish this "perfect-pattern"? Is it good for cooling too? "Perfect-Pattern" diffusion is obtained through scientifically angled diffuser blades and an engineered built-in damper. This, coupled with Auer's "know-how" on efficient air-patterns, makes the big difference. Absolute proof and authority of Auer's theory for air-patterns on baseboard heating can be found on Page 769 of the Heating, Ventilating, and Air-Conditioning Guide, 1958 edition. To answer the other question, Auer "Perfusaire" is IME ideal unit for combination heating and cooling systems.

Without a doubt, Aver "Perfusaire" is your best buy for perimeter heating or combination heating and cooling systems.

It's been proven time and time again. The Auer "Perfusaire" is the mark of quality and performance in the industry. In addition to its engineered perfection, the "Perfusaire" is easy to install. The "Perfusaire" is provided with "knock-outs" to accommodate duct openings in sizes of either 2¼" x 14" or 2¼" x 12".

Send for descriptive literature on Auer's complete line of Registers and Grilles for every need.



For your next diffuser installation, select and install the Auer "Perfusaire" with complete confidence.



THE AUER REGISTER COMPANY

"REGISTERS AND GRILLES FOR EVERY HEATING AND COOLING NEED"

6602 CLEMENT AVENUE • CLEVELAND 5, OHIO

the editor's notebook

(Continued)

In another technique, nitrogen replaces inert gas in the shielding atmosphere, and low flow inert gas is used in the contact tube. This process is best adapted to low cost welding of alloy aluminum sections.

A third technique is a low cost process usable on all weldable aluminum alloys and in all welding positions. This technique employs a low flow of inert gas such as argon containing a small amount of chlorine down the contact tube with a low flow of inert gas through the nozzle in the outer shield.

Air Pollution Control **Good Public Relations**

HAVE YOU been trying to sell dust collecting systems to people who realize such systems are needed in their operation but who don't want to spend the money to install a quality system? Home owners everywhere are becoming more and more annoved with the quantity of dirt and soot in the air and in some areas they are pushing for legislation to control the source of air pollution.

In a recent report, Dr. Haldon A. Leedy, director, Armour Research Foundation of Illinois Institute of Technology, said: "We don't know for sure how much air pollution is costing us, but our conservative estimate is ... about four billion dollars annually, that is, about \$65 a year for every man, woman, and child in urban areas.

"In the Chicago area alone, the cost of air pollution is estimated at approximately a quarter of a billion dollars annually. These figures include decorating and cleaning interior living quarters, cleaning windows, and cleaning clothing, rugs, curtains, and drapes.

"Unaccountable are such

EAD THE PARADA

America's gas heating specialists!

Central Gas Heating for all homes. all locations!

You stay a jump ahead of competition when you let it be known that you represent famous Temco central heating. **Building contractors and home** buyers alike respect the Temca name. They honor it for orefor excellent performance demand it for versatility of line that adapts easily, perfectly, to every location, budget and building requirements



- Temco Counter-Flow Series
- * Temco Lo-Boy Series
- * Temco Horizontal Forced-Air Furnace
- * Temce Perim-Air-



Ceramiclad* heat exchangers-your biggest sales exclusive! Only Temco heat exchangers are finished in Ceramiclad, the exclusive porcelain enamel finish similar to that used for jet aircraft combustion chambers. Ceramiclad withstands for greater temperatures than any furnace will ever reach—and is impervious to condensation.

There's a Temco air conditioning unit to use in combination with every Temco furnace!

*Trade Mark Registration Pending

Write now for complete information:



'THE COMPLETE LINE OF GAS HEATING EQUIPMENT" ROOM HEATERS • FLOOR FURNACES • WALL HEATERS • UNIT HEATERS WARM AIR FURNACES • AIR CONDITIONING • GAS WATER HEATERS

the editor's notebook

(Continued)

difficult-to-estimate costs as exterior building damage, painting and cleaning, damage to farm crops, and taxes for street cleaning and other debris handling.

"It is estimated that in the Chicago area alone, 300 to 400 tons of unconsumed hydrocarbons are being discharged into the atmosphere every day, and Chicago has long been one of the foremost leaders in air pollution control, according to Mr. Leedy. In 1881, Chicago became the first major city in the country to enact a smoke abatement ordinance.

This information makes good sales conversation, and should help to influence a hesitant prospect to purchase an adequate dust collection system. Point out to him that good public relations are essential in modern business.

Plant Tours Build Good **Community Relations**

YOU KNOW your firm is a good place to work, but does your community know it? There's a good chance it doesn't, if you haven't taken steps to inform your fellow citizens. In fact, surveys disclose startling misconceptions of companies in their immediate communities.

It's worth the effort to establish good community relations, for there's no better way of attracting loyal, productive and willing employees. Many business men have found interpretive plant tours one of the most effective ways of creating community understanding of their firms. Too, open houses help to draw attention to the products you sell and to locate prospects for your merchandise.

Clyde M. Barner

EDITOR



FOLLANSBEE seamless TERNE HAS UNUSUAL

VERSATILITY FOR THE CREATIVE ARCHITECT

It can be formed into many contemporary designs
It can be custom colored
It affects normanent protection

It affords permanent protection

It is safe

It is easy to install It is economical

It is economical

WHAT IS FOLLANSBEE TERNE?

As a word, terne means three. As a metal, Follansbee TERNE is the combination of three metals—steel, lead and tin. More properly, it is copperbearing cold-rolled strip steel with a lead tin coating. The coating is an alloy of 4 parts lead to one part tin. This makes TERNE's surface perfect for painting and soldering. Since TERNE is basically steel, its coefficient of expansion is lower than any other roofing metal; it is fire proof, weathertight, windproof, and will last more than a lifetime.

You can form it—and it will never crack You can paint it immediately no special treatment is needed

FOLLANSBEE

STEEL CORPORATION

SEND TODAY FOR ADDITIONAL INFORMATION & YOUR FREE COPY OF STANDARD SPECIFICATIONS FOR FOLLANSBEE SEAMLESS TERME ROOFING



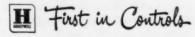
Money—how much did you lose last week on costly service call-backs?

Recent surveys show that when the units you install have all-Honeywell controls you make far fewer trips—and keep those profits. What's more, Honeywell's systems-and-service way of doing business backs you up 100 percent, at no cost to you. You get reliability; easier installations; simplified inventories; educational programs for your staff—and above all, fast help when and where you need it from 112 sales-service offices.

Added up, these benefits mean more profit from every job when your units have all-Honeywell controls. Ask your Honeywell man to prove it.

For information on Honeywell's complete line of control systems for beating and cooling, call your local Honeywell office. Or write Minneapolis-Honeywell, Dept. AA-7-09, Minneapolis 8, Minnesota Honeywell sales and service coverage is world-wide.

Honeywell





For more than just a motor

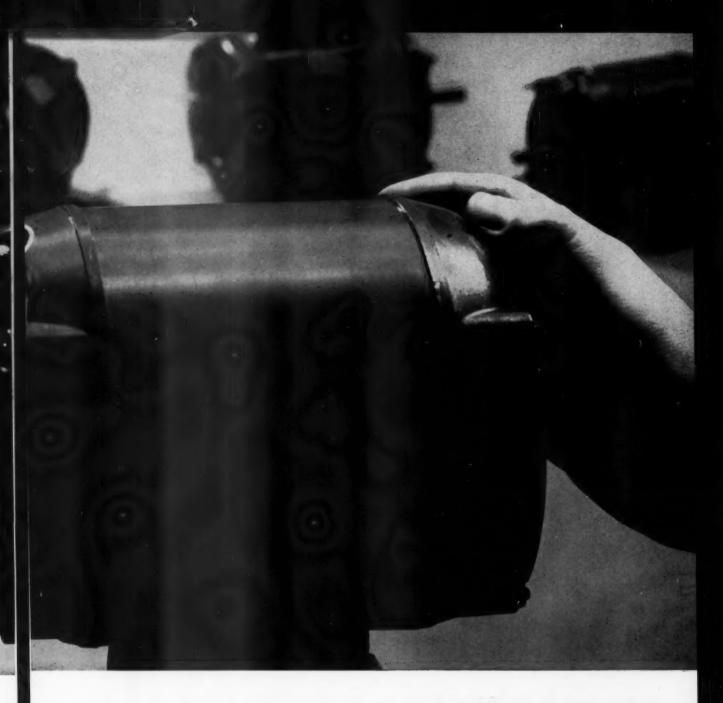
Solve your motor problems with

You can make your job easier with Century Electric's complete line of fractional-horsepower motors. Here's how:

Easy ordering—You save time because you get answers to all motor problems from one source. This means you don't have to shop around for the motor you need. You name it—capacitor, jet pump,

unit heater, oil burner, brake, gear—any one you want, and in all types of enclosures too.

Fast shipments—From Century Electric's complete stock you can get a motor for any standard application. In addition, motors are packed in sturdy boxes so if you reship you know they'll arrive in good condition.



Century's complete fractional line

Application know-how—You want to be sure you have the *right* motor for the job. And if you need expert help, you can get it from your nearest Century Electric sales engineer. He knows motors inside and out because he sells, applies and thinks motors day after day.

This is why you get more than just a motor

from Century Electric. You get a quality product, fast answers and engineering application know-how on motors up to 400 hp—all from one source.

CENTURY ELECTRIC COMPANY

St. Louis 3, Missouri Offices and Stock Points in Principal Cities

Century 68-19

NEW MILGOR K-GUTTER HANGER

ONE

TWC

AND YOU'RE THROUGH!

Latest Addition to Milcor's Complete Line of Accessories



SPEEDS ERECTION OF K-GUTTER

Save installation time and get firm support for Milcor K-Gutter on any roof. The new Milcor K-Gutter Hanger slips easily into the open hem under the lip of Milcor K-Gutter. No punching or bolting required. Available from your jobber or the nearest branch listed below.

MILCOR.

Member of the CHAND-Steel Family

Milcor K-Gutter 20-foot lengths save soldering and installation time.

INLAND STEEL PRODUCTS COMPANY, Dept. G. 4023 W. Burnham St. Milwaukee 1, Wisconsin Atlanta • Baltimore • Buffalo • Chicago • Cincinnati • Cleveland • Dallas • Denver • DETROIT • KANSAS CITY LOS ANGELES • MILWAUKEE • MINNEAPOLIS • NEW ORLEANS • NEW YORK • ST. LQUIS.

ASHAE, ASRE To Vote on Merger

MINNEAPOLIS—The councils of the American Society of Heating and Air-Conditioning Engineers and the American Society of Refrigerating Engineers have approved in principle a method for merging the two societies. ASRE members attending their 54th annual meeting in Minneapolis authorized submission of the proposal for a vote.

E. R. Queer, ASHAE president, and Cecil Boling, ASRE president, stated that according to present plans, the proposal for a merger and proxy ballots will be officially mailed to members of both societies in late October. Particulars of the merger plan will be mailed to members of both groups by September. Ballots will be taken in person or by proxy at the 45th semi-annual meeting of ASRE in New Orleans, and a special meeting of ASHAE, both scheduled for December 1.

Set Dates, Place For 1959 AC Show

NEW YORY CITY—The 14th International Heating & Air-Conditioning Exposition will be held in Convention Hall, Philadelphia, Jan. 26-29, 1959. The show, sponsored by the American Society of Heating & Air-Conditioning Engineers, will be held during the society's annual meeting.

ARI Issues 2nd Edition Of Room Cooler Ratings

Washington, D. C. — The Air-Conditioning and Refrigeration Institute has issued a second edition of its 1958 list of room air conditioner ratings, based on the reports of 31 manufacturers and merchandising companies. The ratings are stated in terms of British thermal units per hour of cooling capacity, as established in accordance with ARI Standard 110-58.

NWAHACA Launches 'Silver Shield' Promotion Program

CLEVELAND - The National Warm Air Heating and Air Conditioning Association has launched its "Silver Shield" program, which is designed to stimulate public interest in and demand for warm air heating and air conditioning systems installed in accordance with standards of design and installation as recommended in the NWAHACA manuals. George Boeddener, managing director of the association, in announcing the program, said, "Now we have a program which will make it possible for dealer-contractors who want to install quality systems to merchandise such systems with sound, hard-hitting sales promotional support." Objectives of the program are:

1) To provide the public with warm air heating and air conditioning installations which are designed and installed in accordance with prescribed installation methods, and which are identified as such by the "Silver Shield" label.

2) To encourage dealer-contractors to promote, sell and install warm air heating and air conditioning installations of "Silver Shield" quality for the benefit of the public as well as the industry.

 To enable manufacturers of equipment and components to be assured of competent selection and installation of their products.

According to Frank Meyer, president of the association, the principal objective of the program is "to render a superior and safe-guarded service to the public. The 'Silver Shield' program makes it possible for consumers to identify, specify and get a quality warm air heating and/or air conditioning system."

Three labels are available, covering winter air conditioning, summer air conditioning, and year 'round systems.

Industry representatives in any locality can organize an "Indoor Comfort Bureau" for the specific purpose of operating the program. The local bureau, which will be licensed by NWAHACA to conduct the program in its area, will sponsor, operate and finance local public education, advertising, promotion and publicity. It will provide and supervise dealercontractor training in use of the NWAHACA manuals for installing "Silver Shield" systems. It will receive applications for identifying labels and will issue them based on evaluation of system conformance with "Silver Shield" standards. It will also handle buyer complaints that have not been previously satisfied by installers.

Group promotion activities will be heavily emphasized in order to enable members of each local group to unite their promotion efforts and finances for the greatest amount of local impact at the smallest amount of per-member cost. Local newspapers, local radio and TV, direct mail and other media will be utilized. Advertising plans, layouts, scripts, mats, booklets, etc. will be made available to local promotion groups by the national association.

FHA Applications Hit All-Time High

Washington, D. C. — A new alltime high of over 90,000 unit applications for FHA insurance of mortgages on one-to-four-family homes was established in May, according to FHA Commissioner Norman P. Mason. The previous record of 89,-764 was reported in May 1950.

Included in this record volume were 34,558 new home units — over 9 percent above the 31,610 reported for April — and another new all-time record of 55,449 units in existing dwellings, an increase of nearly 16 percent above the previous record which was established in April.

(More news on page 22)



. . See for yourself why we consider the new Tecumseh Model B21U18 the best buy in a full capacity two horsepower refrigeration compressor. Here is a compressor with a measurable 24,000 BTU* capacity and with a proven efficiency of 9.25 BTU per watt! And by designing this increased capacity within the same standardized physical dimensions as other popular Tecumseh twin cylinder models, we are able to offer the B21U18 to you at a lower price than most other two horsepower compressors, all of which have less capacity. Add other features available only through Tecumseh-engineered compressors — such as our new patented anti-slugging protection — and you see why your best buy is always Tecumseh.

Tecumseh has continually provided the industry with better products, priced to your advantage, in any volume required, and within the normally tight delivery schedules demanded. We are determined to continue earning the confidence the industry has placed in us and invite your inquiries on any product problem.

Capacity rating of the Model B21U18 based on:

300 P.S.I.G. Head Pressure

77 P.S.I.G. Suction Pressure

130°F Condensing Temperature

45°F Evaporator Temperature

95°F Return Gas

95°F Ambient

115°F Liquid Temperature Entering Expansion Valve



The Leader Serving Leaders in the Air Conditioning and Refrigeration Industries

TECUMSEH PRODUCTS COMPANY

MARION, OHIO

TECUMSEH, MICHIGAN

EXPORT DEPT: P. O. Box 2280, 24530 Michigan Ave., W. Dearborn. Michigan

Does Cooling Cost Too Much?



Revolutionary Circular Cooling Coil: Lower and more compact, providing increased cooling surface in less space — with improved condensate drainage! Available with low cost Plenum that is adaptable to virtually any size or make of furnace!



Superior New Air Cooled Units Break Down the Price Barrier!

More heavily constructed, less complicated in design, easier to install and service!

The completely new Luxaire Air Cooled Condensing Units and Companion Cooling Coils have every desirable advancement - and more!

For, if you have been waiting for the big price breakthrough in home air conditioning - it is here, now!

If you have been stymied by high prices, quote your builder, architect and homeowner prospects Luxaire Air Conditioning - and get the business, plus a handsome margin of profit!

See your Luxaire jobber for new catalogs and his sensational Luxaire Air Conditioning prices, today!

Underwriters' Listed Air Cooled Codensing Unit: Constructed for unsheltered outdoor installation, with 16 Gauge Zinc Coated Cabinet and Top Dischargel Has extra-large Condenser Coil and efficient Centrifugal Blowerl 2, 3, 5 H.P. Sizesl

New Duct Type Cooling Coil: Fully insulated Heavy Gauge Casing has flanges for connection of ducts! Condensate Drain Pan is built in! Convenient Access Panel I



The MOST COMPETITIVE Line of EVERYTHING



Assembled and Wired. Gas Fired. Oil Fired. Winter Air Conditioners.



Assembled and



4 Oil Burning Sizes. 4 Gas Burning Sizes.

Basement Type Winter Air Conditioning Units. Burn either Gas or Oil.



Gravity Burn either Gas or Oil.



Gas Unit





Combination Year 'Round Air Conditioning Units. 2, 3 or 5 H.P. Air or Water Cooled. Burn either Gas or Oil.



Water Cooled

OLSEN MANUFACTURING COMPANY . . ELYRIA, OHIO

HEATING & AIR CONDITIONING UNITS

New Building Code for New Castle, Ind. Establishes Minimum Heating Standards

New Castle, Ind. - Ordinance 768 has been passed and put into effect by the City of New Castle's Common Council. Ordinance 768 regulates and establishes minimum standards in the erection, construction, enlargement, alteration, repair, electricity, plumbing, heating, ventilation, air conditioning and sheet metal work of all public and private buildings or structures in the City of New Castle, Ind. It provides for the creation of a building commissioner, for the issuance of licenses and permits, for inspections and the collection of fees therefor. Also it stipulates penalties for violations.

The passage by the City Council of New Castle of this ordinance makes New Castle the first city in Indiana to adopt the model code and ordinance recently developed and approved by the officers and the Department of Public Information of the Sheet Metal and Warm Air Heating Contractors' Association of Indiana. H. W. Meggs, a past president of the state association, is chairman of the Department of Public Information.

The code and ordinance is the result of several years' work, and it incorporates the best features of many local codes in use elsewhere. It is designed to provide minimum standards to safeguard life and limb, health, property and the public welfare.

Minimum standards as required will be determined from certain publications prepared for the purpose of establishing such standards, a copy of each of which is on file in the Office of the Building Commissioner in the City of New Castle, Ind. These publications include:

The National Warm Air Heating Code, by Sheet Metal and Air Conditioning Contractors' National Association

All current Manuals of Warm Air Heating and Air Conditioning, by National Warm Air Heating and Air Conditioning Association

Heating, Ventilating and Air Conditioning Guide, by American Society of Heating and Air-Conditioning Engineers

Standard Practice in Sheet Metal Work, Manuals No. 1, 2, and 3, by Sheet Metal and Air Conditioning Contractors' National Association

Modern Application of Sheet Copper in Building Construction, 1948, by Copper and Brass Research Association

The National Building Code, Volume I, by the National Board of Fire Underwriters

The National Electrical Code, by the National Board of Fire Underwriters

The National Plumbing Code, by the American Standards Association

Boiler Installation Manuals, by the Institute of Boiler and Radiator Manufacturers

Licenses issued under the provisions of this ordinance will be revoked or suspended by the mayor when a licensee has made a materially false statement on his or her application, or otherwise failed to comply with the provisions of the ordinance.

April Housing Starts Beat Last Year's Total

Washington, D. C. — Nonfarm housing starts rose more than seasonally in April, to 95,000 — a little above the April 1957 figure, according to preliminary estimates of the U.S. Labor Department's Bureau of Labor Statistics. Private housing accounted for nearly all of the gain over March, rising about 20 percent to 90,700 units in April.

F. W. Dodge Corp. reports that the April construction contract total for the United States was \$2,881,011,000, an increase of 4 percent over

Engineer Groups Elect Aeberly to Life Membership

CHICAGO — The Chicago Association of Consulting Engineers has awarded a life membership to John J. Aeberly, chief, Bureau of Heating, Ventilating and Industrial Sanitation for the City of Chicago. Mr. Aeberly is known locally as the father of the Chicago Ventilating Code and has worked



John J. Aeberly

with all segments of the industry to develop the present code, which was completely rewritten late in 1957. The rewritten code, summarized in the February 1958 issue of American Artisan, is expected to become the basis for future revisions of existing codes in all major cities.

Mr. Aeberly has also been honored with a life membership in the American Society of Heating and Air-Conditioning Engineers. He served as a member of the society's council during the period 1937-39 and has been active in the society's technical advisory committees. He has also served as president of the Illinois chapter of ASHAE and has been a member of its board of governors.

April of last year. The residential building category showed its first increase of the year in April, rising 1 percent to a dollar total of \$1,240,217,000. The number of dwelling units covered by the contracts was up 4 percent. However, the number of one-family houses in April was just about even with last year. The increase was primarily in multiple dwellings.

(More news on page 26)

Look twice to Complete line Coast-to-coast

controls r standard requirements service and replacements



Model 304C Automatic Expansion Valve offers two adjustment ranges: 10" vac. to 45 psig; 10" vac. to 75 psig. Designed for R-12, R-22, methyl and sulphur.



Model 207C Thermostatic Expansion Valve with adjustable or fixed super-heat. Pressure limit on special order. When an external equalizer is re-quired, specify Model 207DE.

Here's just a sampling of industry's most diverse line of controls. Whatever your application problem—air conditioning, refrigeration, ventilation, gas, oil heating—it's under control when you choose from A-P's broad line of standard controls. And A-P offers the backing of nation-wide service... in the refrigeration field alone, more than 400 jobbers are conveniently located coast to coast for quick competent maintenance and replacement.

for quick, competent maintenance and replacement service. Write today for full details.

conditioning and refrigeration



Medel 65 Water Regulating Valve meters flew of water and other fluids in response to fluid pressure on valve bellows. Controls water flow to compressors and condensers.



Model 410 Trap-Dri. 100% moisture and acid removal with PA 400 silica gel. No appreciable pressure drop. 1/4" to 1/4" to 1/4" solder connections.



Model 2355 Evaporator Pressure Regulating Valve is suitable for all refrigerants. 1/2 ton R-12, visual pressure setting from 0 to 40 lbs.



Model 274 Solenoid Valve — Largest of 4 new A-P solenoid valves that satisfy any application. Full range of orifine and connection sizes with capacities up to 60 tens.

and heating



Series 5250 Gas Control for furnaces and unit heaters. Built-in pressure regulator. 100% sefe ignition and shut-off. Flow interruptor with summer shut-down.



Series 55 Gas Central offers a choice of four automatic, interchangeable electric and non-electric thermostatic accessories. Satisfies any comfort preference.



Series 5010 Gas Control for manual or automatic heater operation. Nine big fea-tures. Available with magnetic operator.

heating



Model 2400 Oil Centrol has exclusive all-steel body. Safely maintains an even rate of all flow to vaporizing type, oil-burning heaters and furnaces.



Model 2700 Comfort Control Kit provides electric thermostatic heat regulation for heat-ers and furnaces using A-P controls. Simple, fast installation.



Model 2709 Flexetemp Thermestatic Centrel Kit easily converts A-P 240Y series single metering stem valves to dependable automatic operation.



CONTROLS COMPANY OF AMERICA

Manufacturers of A-P (ONTROLS

2452 North 32nd St. • Milwaukee 10, Wisconsin
Cooksville, Ontario • Nijmegen, Holland Controls That Make Modern Living Possible

Econo-Pak® Blower Assemblies. Series "A" blowers shipped with housing supports and motor mounting unassembled. Shipped in separate cartons or palletized in units of 24.

GIVE 'EM SERIES"A" FOR EFFORT

Compact LAU Series "A" Blowers give you 350 to 50,000 c.f.m. plus a host of exclusives

COMPACT—that's the word for Lau Series "A" blowers. Their compact design gives you more c.f.m. from less blower space so you'll have greater design freedom in planning your equipment. We know from experience (over 27 years now) what an unhappy compromise an extra inch of over-all blower width can mean in the design of heating and cooling equipment. That's why a host of special advantages has been designed into Lau Series "A" blowers.

For instance: Reinforced beading which strengthens each scroll side. Or Preslok® Wheels that increase operating speed maximums at least 50%. And that's just the start of Lau advantages! Versatile motor mounts give maximum lateral and rotational motor movement. Exclusive tripod bearing brackets permit maximum air movement with great support stability. And don't forget Lau designed bearings, shafts and pulleys which are recognized leaders.

On Econo-Pak® and "Budget" versions of Series "A" blower assemblies, pre-punched scroll sides permit all 4 discharge angles and housing supports are applicable to every discharge angle without adjustments.

Isn't it time you benefited from all these advantages? LAU

Blower Company, 2027 Home Ave., Dayton 17, Ohio. Other plants in Irwindale, Calif. and Kitchener, Ont., Canada.



"Budget" Blower Units. Series "A" blowers less housing supports and motor mounting. Shipped in separate cartons or palletized in units of 24.

Here's the Man to Call ...



Cincinnati 30, Ohio Don G. Jensen 6422 Glade Avenue Cleveland 24, Ohio Charles C. Miley 1561 Woodrow Avenue Cranford, New Jersey E. C. Wolford 11 English Village Dearborn, Michigan
J. B. Wallace
9 Byfield Lane
Denver 2. Colorade
Ben T. Clark
1421 Court Place
Elmwood Park 35, Illinois
William J. Lohrey
2047 77th Avenue

Kansas City 14, Missouri Charles L. Sigman 8906 Holly Avenue Irwindale, California G. R. Mergenthaler 15601 Arrow Highway Prairie Village 15, Kansas Victor Stewart 7112 Buena Vista Seattle 55, Washington William M. Peistrup 19246 Lago Place Syracuse, New York Henry Seebach 560 Allen Street York, Pennsylvania E. F. Humphrey 327 Lambeth Drive

The BIG Wheel in air moving

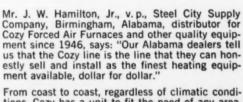


Compact UP-FLOW AND COUNTER-FLOW COZY FORCED-AIR MODELS give zero clearance; let you use 4" piping or conventional ductwork. Has exclusive Heat Wringer Heat Exchanger. Adaptable for eir conditioning. 75,000, 105,000, 140,000-BTU input capacities.



COZY HORIZONTAL FORCED-AIR MODELS available in five capacities 60,000 8TU input. This space and money-saver can be installed in attic, utility room, under floor...even without basement.

COZY WALL HEATERS, available in four capaci-ties, single- or dual-wall installations; three differ-ent temperature controls are available. AGA ap-proved under 1937 central heating standards.



IN ALABAMA-

tions, Cozy has a unit to fit the need of any area. For over twenty-five years, Cozy has been the high-quality, gas-fired line that delivers complete satisfaction with virtually no service calls from the installer.

If you're missing out on sales and profit, get the facts on the Cozy high-profit, year-around sales plan. Write today!



COZY



COZY CHALLENGER, best buy in floor fur-es, has four capacities: 000, 50,000, 45,000, 1 75,000 BTU.

THE ADVANCE FURNACE CO. WICHITA

Manufacturer, College to Construct House Designed for Air Conditioning

Los Angeles — A home designed especially for air conditioning is to be built in the San Fernando Valley as a joint study project of California State Polytechnical College and Utility Appliance Corp. As part of the project, student architects were assigned the problem of developing plans for the home, which was to be designed to provide maximum comfort with lowest possible initial and operating costs. Students were required to:

 Specify correct size heating and air conditioning equipment for a house containing three or four bedrooms, living room, family room, dining area, kitchen and two baths

Take full advantage of roof overhangs to shade exterior walls and glass

3) Make use of landscaping for its effect in reducing heat gain

 Provide adequate insulation for maximum efficiency of air conditioning unit

5) Specify construction materials designed to help reduce heat gain

Houses were to be in the \$19,500 to \$21,500 price range if built in tract quantities, or \$22,500 to \$23,500 if custom built. Lot size was to be 60×125 ft.

Home Improvement Group Adopts 'Code of Ethics'

NEW YORK CITY—The Home Improvement Council has adopted a "Code of Ethics" prohibiting misrepresentation in advertising and selling. In announcing the code, HIC pointed out that "homeowners everywhere have been frightened away from spending for home improvements because of the unscrupulous acts of a few companies. Now, more than ever, they need to be encouraged to invest in their homes. Our program is strengthened by this assurance."

Thirty-two designs have been submitted. The winning plan will be chosen by a jury of Los Angeles area architects and builders, and construction will begin some time after January 1.

The Utility firm underwrote design costs and will finance construction.

Home Modernization Gets Local Promotion

NEW YORK CITY — Over 1400 newspapers and 1500 radio and television stations have been sent copies of public service advertisements which stress the importance of modernizing the home. Heating and air conditioning are among the subjects promoted by Home Improvement Council who is handling the promotion.

Report Analyzes '57 Failures; Shows 60% of Firms Less Than Five Years Old

NEW YORK CITY — Dun & Bradstreet's failure index shows that 52 concerns failed in 1957 for every 10,000 listed in the firm's reference book. This rate has edged up from 48 a year ago, but falls well below the 70 per 10,000 recorded in 1939.

Casualties of medium size accounted for a sharp rise in dollar losses, according to the index. Neither very small casualties, those under \$5000, nor exceptionally large ones, in excess of \$1 million, were as numerous as in the preceding year.

Businesses over 10 years old continued to claim a growing portion of total failures. They comprised 9 percent in 1947, but have edged up in each succeeding year until they accounted for 19 percent of the total in 1957. Failures among enterprises in their first five years of operation are still large — 60 percent of the 1957 casualties fell in this group.

In all functions of business, failures exceeded 1956 levels, but the rate of increase eased appreciably in every group except manufacturing. Construction and retail businesses continued to feel the brunt of the postwar uptrend in mortality and wholesalers again showed the least year-to-year change.

In the construction industry, general building contractor failures increased from 708 in 1956 to 805 in 1957, a rise of 13.7 percent. The failures of building contractors were

responsible for a 14.1 percent increase in subcontractor failures — 1030 in 1956 as compared to 1175 in 1957.

A tabulation of apparent causes of business failures indicates that the inability to avoid conditions which resulted in inadequate sales, receivable difficulties or competitive weakness was responsible for the greater part of the failures. Of these, inadequate sales is shown as causing 49 percent of the failures; receivable difficulties, 9.8 percent; and competitive weakness, 21.8 percent.

Failure statistics compiled by Dun & Bradstreet do not include all discontinuances of business. Reported failures include only those concerns involved in actions likely to end in losses to creditors.

Sets Up Sheet Metal Scholarship Program

Los Angeles — The Los Angeles Trade-Technical Junior College now offers Bill Hart sheet metal scholar-ships sponsored jointly by labor and management groups in the sheet metal industry. Winners of scholar-ships will be offered summer employment in a sheet metal shop at \$2.04 per hr, with other benefits. They will receive \$25 per month while attending sheet metal classes, which begin September 15.

(More news on page 32)

to heat a little water...

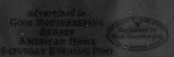
elegance

to heat a lot of water...

the newly redesigned

ROBERTSHAW Unitrol 400

the dependable way to step up the appearance of your water heaters for increased value



Robertshaw-Fulton

COMPANY





This is a Landmark

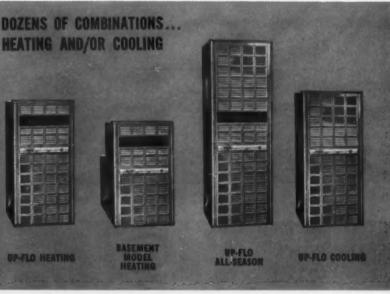
New! LANDMARK by LENNOX

... MODULAR "BLOCK" SYSTEM FOR 100% TAILORED INSTALLATIONS

"Spectacular" is the word for this new Lennox development. It's spectacular in quietness...in installation versatility...in operating efficiency! Blower, heating section and cooling coil are separate packages—yet fit together as a compact unit to deliver the exactly right comfort. No guesswork—no "make-do."

It's as simple as ABC. Just choose the blower with the proper Cfm capacities—and add whatever heating and/or cooling units that best suit the need (as well as your customer's fuel preference and budget).

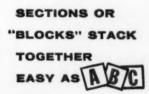




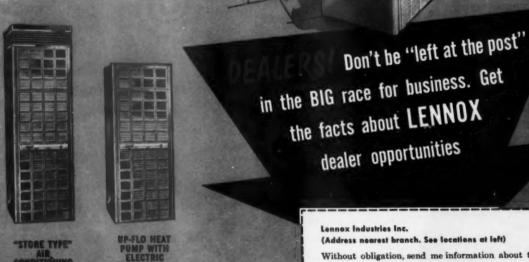
LENNOX Industries Inc.

A "LANDMARK" IN AIR CONDITIONING AND HEATING... IN SALES OPPORTUNITY, TOO!

- · Heating units in gas, oil, electricity and HEAT PUMPS
- Complete flexibility
- Reduces installation costs
- Quietest units on the market
- Commercial and residential
- Simplifies your inventory
- · Up-flo or down-flo



Each section is housed in beautiful 20 gauge steel cabinet. Centering pins assure perfect alignment—give appearance of a single unit. Capacities-heating: 68,000 to 378,000 Btu input. Cooling; 2 to 10 tons.



Marshalltown, Iowa • Columbus, Ohio • Syracuse, N. Y. Fort Warth, Texas • Salt Lake City, Utah • Los Angeles, Calif. Decatur, Georgia • Des Moines, Iowa

Lennox Industries (Canada) Ltd.—Toronto, Montreal, Calgary and

(Address nearest branch, See locations at left)

Without obligation, send me information about the dealer opportunities with the new Landmark.

Address State.

My Name

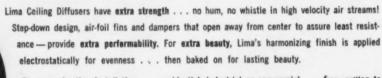


DAYTON'S NEWEST COMMERCIAL BUILDING **SELECTS DIFFUSERS**

Proper Comfort Distribution of heating and air conditioning over 130,000 sq. ft. of office space.

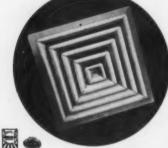
Approximately 1000 Lima Ceiling Diffusers will distribute balanced heating and air conditioning comfort . . . quietly, evenly . . . from the gigantic 490-Ton Air Conditioning System.





For every heating installation . . . residential, industrial or commercial . . . from ceiling to floor . . . Lima's standardized line of Diffusers, Registers and Grilles answer every need . . . BETTER . . . at no extra cost!

The Herman Miller Building, 333 W. 1st St., Dayton, Ohio. Owners and Builders: Albert L. Miller, Norman Miller, Zimmel Miller. Mechanical Engineer: Charles Dondican, Dayton, Ohio. Heating, Air Conditioning Wholesaler: M. J. Gibbons Supply Co. Duct Work: Schrieber Sheet Metal & Roofing Co.



LIMA REGISTER COMPANY 1788 N. Cable Rd.,

LIMA, OHIO



At left, new high-capacity 2, 3 or 5 H.P. Air Cooled Condenser-Compressor Unit has weather-proof construction for installation out-of-doors. Underwriters' Listed! Less complicated design! Easier to install and service!

Below, new Duct-type Evaporator Coil is encased in insulated, enameled Heavy-gauge cabinet, having flanges for connection of ducts.





Above, radically different and vastly superior new Round Evaporator Coli is more compact and adaptable, with greater cooling surface in smaller space! Pictured in inexpensive accessory Plenum that provides easy, slide-in installation.

Now! with MONCRIEF You can make Air Conditioning REALLY PAY OFF. \$

Advanced New Moncrief Units are Priced for Volume Selling!

Effective with the all-new line of Moncrief Air Cooled Condenser-Compressor Units and Add-On Evaporator Coils, cooling costs are down and cooling profits up!

Moncrief has taken the lead in changing the opinion of thousands of homeowners, builders and architects that "air conditioning costs too much".

Call your Moncrief Wholesaler, today, for the startling prices and sales-stimulating catalogs.

Use these prices to convince prospective buyers that Moncrief Air Conditioning does not cost too much!

You'll discover profit rewards beyond your fondest expectations!



Gas Fired and Oil Fired Counterflow Units Completely Assembled and Wired



Harizontal Furnaces 4 Gas Sizes 4 Oil Sizes



Gas Burner

Gas Fired and Oil Fired Winter A.C. Units Completely Assembled and Wired



Ges or Oil Fired Winter A.C. Units



es or Oil Gas Fir Fired Unit Gravity Heate



2, 3 or 5 H.P. Air or Water Cooled Gas or Oil Fired Year 'Round



3 or 5 Ton Water Cooled add-On Summer A.C. Units

THE HENRY

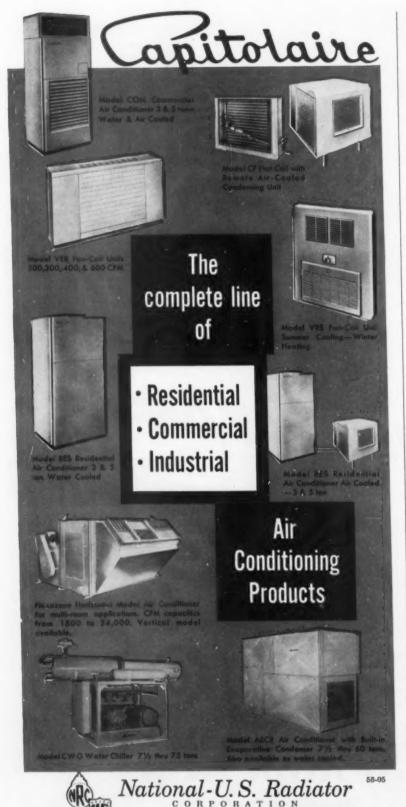
FURNACE COMPANY

Medina, Ohio





FURNACE PIPE AND FITTINGS



HEATING AND AIR CONDITIONING DIVISION

WHAT'S HAPPENING...

Launches Program To Speed Upturn In U.S. Economy

BLOOMFIELD, N. J. - General Electric Co. has launched "Operation Upturn," a nationwide campaign which the company says is designed to "build more sales, and thus create more jobs, in 1958 by building extra values into every GE product." Citing the growth of the country's economy since 1937, the company notes increase of population from 129 million to more than 171 million; increase in annual income from 71 billion in 1937 to 300 billion in 1958; increase in yearly savings from under four billion dollars to close to 20 billion.

According to GE's Don Herbert, "We can all have confidence in a growing America. What is needed right now is positive action, based on this confidence, to build jobs."

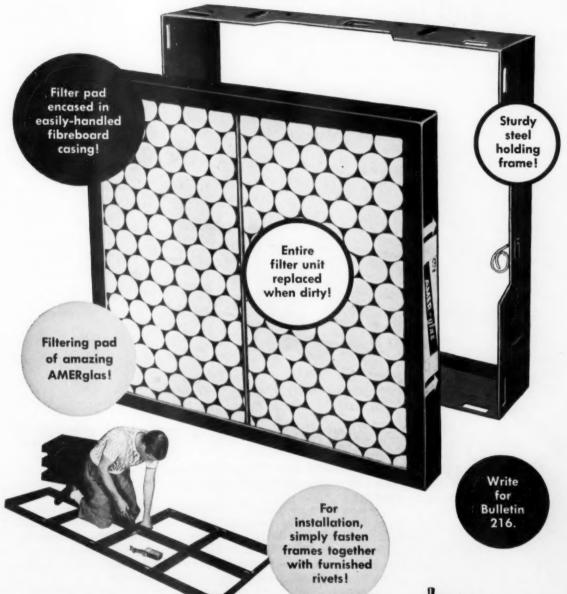
Participating in the program, in addition to the firm's 250,000 employees in more than 100 plant communities across the country, are independent suppliers and retailers who sell or service GE products.

NEMA Forms Room Air Conditioner Section

NEW YORK CITY-The National Electrical Manufacturers Association has formed a room air conditioner section, according to Joseph F. Miller, NEMA's managing director. Announcement of the formation of the new section followed a meeting called for representatives of room air conditioner manufacturers who are members of the association. Attending the meeting were representatives from the Kelvinator Div., American Motors Corp.; Fedders-Quigan Corp.; Frigidaire Div., General Motors Corp.; General Electric Co.; Hotpoint Co. (a division of General Electric Co.); Philco Corp.; O. A. Sutton Corp.; Westinghouse Electric Corp.; and Whirlpool Corp.

AMER-ylas disposable air filters

OFFER SIMPLEST MAINTENANCE!



American Air Filter

355 Central Avenue, Louisville 8, Kentucky American Air Filter of Canada, Ltd., Montreal, P. Q. Dust Control quipment



AMERglas Replaceable Air Filters

- BETTER AIR IS OUR BUSINESS -

Herman Nelson Propeller Fans





Herman Nelson Unit Blowers





For all your steel requirements, it pays to call Ryerson.

Principal products: Carbon, alloy and stainless steel-bars, structurals, plates, sheets, tubing-industrial plastics, metalworking machinery, etc.

requirement of the sheet metal shop.

JOSETH T. RYERSON & SON, INC. PLANTS AT: NEW YORK . BOSTON . WALLINGFORD, CONN. . PHILADELPHIA . CHARLOTTE . CINCINNATI . CLEVELAND DETROIT . PITTSBURGH . BUFFALO . INDIANAPOLIS . CHICAGO . MILWAUKEE . ST. LOUIS . LOS ANGELES . SAN FRANCISCO . SPOKANE . SEATTLE



Quality Story Holds Up

IT'S BEEN MOST GRATIFYING to us as we made the rounds of state and national conventions this year to learn about the many ways dealer-contractors are using available sales tools in an endeavor to maintain their profits at a satisfactory level. Recently at the convention of the Sheet Metal and Air Conditioning Contractors' National Association, a dealer-contractor from Kansas City said he found American Artisan's Standards for Rating Heating Systems the best source for answers to prospects' questions when they start talking about the price of a job rather than the comfort they can buy.

This dealer-contractor doesn't attempt to avoid discussing price, but each time the subject is brought up he immediately presents one of the 12 points on the Standards for Rating Heating Systems card as a reason why his price may be higher than that quoted by other dealer-contractors.

The strongest points a dealer-contractor can use to back up the "quality, not price" story on the standards card are his company's reputation for installing heating systems that will provide the comfort the prospect expects, and the advantages of the product he recommends.

Salesmen can use the standards card, the Kansas City dealer-contractor continued, to point out that the prospect is buying not just a heating system, but comfort—and the price of comfort cannot be out of line when compared on an equal basis with other proposals.

He also observed that a prospect often will say he cannot afford to pay the price asked. To this the heating salesman can counter that the prospect cannot afford *not* to pay the small additional amount for a well-installed and wellbalanced heating system that can meet the specifications spelled out on the *standards* card.

He said he has found that most "price" objections are not based on price at all. They really amount to a lack of understanding of the differences between heating sysstems. American Artisan's heating standards card is one of the best tools available for emphasizing these differences.

HOME FURNACE CO.

VARIETY OF EQUIPMENT displayed in the home show booth attracts interest in the heating dealercontractor's services. Spot lights feature equipment and signs explaining its application



HEAVY TRAFFIC requires full

complement of booth attendants to

avoid overlooking hesitant pros-

Standards and Check-Lists



1 AN INTEREST-CREATING DISPLAY stops passersby who are asked to fill out registration cards which are placed in prospect file for follow-up later on

Curious visitors become good modernization

Arresting display of equipment, signs and literature plus full use of American Artisan's two sales tools adds up to lots of visitors and productive leads

THE KEY TO SUCCESS in attracting productive leads with displays at home shows and county fairs has been found by Don Lacey, Home Furnace Co., Jackson, Mich. Mr. Lacey creates interest at his booth with a double-barreled approach: 1) a well-lighted area displaying a variety of equipment and literature, and 2) handout copies of American Artisan's Standards for Rating Heating Systems cards.

The standards are prominently displayed on the counter at the front of the booth and on a poster at the rear of the booth. The poster states, "Don't buy on price alone—use American Artisan's standards to make a selection and save in the long run." Beneath this message is the explanation that American Artisan is the leading trade magazine in the warm air heating and residential air condition-

ing field—"the voice of the industry."

Display Exposed to 7000

The Jackson home show, sponsored by the Jackson Junior Chamber of Commerce, is open six nights from 6:30 to 10:30 and Saturday and Sunday afternoons from 1:30. The population in the general market area of Jackson is approximately 120,000. Show attendance runs about 7000.

A 320 sq ft booth was rented by Home Furnace Co. for \$210. Last year, with the same size booth, at least 10 heating system sales were traceable directly to inquiries at the booth.

The booth is stocked with highboy, lowboy, gas- and oil-fired furnaces, electronic air cleaners, a counterflow

pects

Produce Modernization Leads at Home Show



2 WHILE THE PROSPECT is registering, booth attendant opens a conversation about how to buy a warm air heating system



3 COPY OF THE HEATING STANDARDS CARD is offered prospects as its authoritative background is pointed out on large sign in the background

prospects in five-step sales presentation

furnace, conversion oil burners, a demonstration unit showing the effectiveness of electronic air cleaners, a variety of literature on all products handled by the Home Furnace Co., a cutaway model of a furnace and both cleanable and throwaway air filters.

Signs Are Eye-Catchers

Several signs attract attention and point out the highlights of the various pieces of equipment. One sign invites passersby to "Ask for free demonstration." Another sign proclaims, "Equipment displayed here can be financed conveniently and economically at your local bank." These signs are placed so people passing the booth will notice them. Spotlights are focused on the signs to make reading easy. The booth is manned at all times by three of the company's employees.

Another device used to create interest is a 24 in. high doll that sells for \$50 in toy stores. This colorfullydisplayed doll attracts the attention of children, who get their parents to stop. Women also have shown considerable interest in the doll. When a person has stopped to look at the doll, he is asked to register on one of the cards on the counter.

Ease Into Standards Story

While the visitor is completing the registration card, a booth attendant asks him how his heating system is performing. If the registrant does not own a home, but is contemplating buying one, he is asked about the specifications being considered for the heating system. This conversation leads into a discussion of the Standards for Rating Heating Systems, published by American Artisan, which provides this information for prospective home owners or home owners desiring to have their systems modernized.

Displays Dramatize Sales Talk

During this conversation, the attendant points out that there are many ways to buy a heating system and that price alone is the poorest yardstick to use. Early in the conversation the attendant invites the registrant to step behind the counter



4 PROSPECTS ARE INVITED to examine the equipment on display as the salesman points out features that will provide the conditions stressed on the standards card



5 DETAILS OF THE EQUIPMENT are pointed out on a cutaway model to demonstrate the difference between high and low priced equipment



DIRECT MAIL PIECE invites prospects to check their heating systems against the conditions listed on American Artisan modernization check-list, bring check-list to home show for discussion



INVITE EVERYONE TO REGISTER is Mr. Lacey's advice. He says you can never tell which prospect will be the best until you have had an opportunity to visit them in their homes



TICKLER FILE aids in following up on appointments developed during interviews at the home show

and see how the Home Furnace Co. line of equipment has been designed to meet the requirements as outlined in American Artisan's Standards for Rating Heating Systems.

Taking the visitor to a cutaway furnace which reveals all the major components, the salesman points out specific features and explains their contributions to comfort in the prospect's home. The company has found that many people use the *standards* cards to check against contracts for installation or modernization work. This year, Home Furnace Co. expects to surpass its 1957 home show sales performance (10 heating system sales), because on the second night of the show 15 appointments were made with people who were quite interested in the systems recommended by the salesmen. This is more than twice as many as were made during an evening at any previous home show.

Use Standards to Sell Modernization



THIS ARTICLE describes another way the Standards for Rating Heating Systems card has been used to sell modernization. The standards card, introduced in July, 1957 American Artisan, is ideal for use with the Heating Check-List promotion tool presented in the March, 1958

American Artisan Modernization Issue. Attractively designed and written in language the home owner can understand, the standards card lists the 12 points which contribute to complete winter comfort in the home, and rates the prospect's heating system "Good," "Fair" or "Poor" in terms of each of the 12 comfort conditions. The card adds authority to the sales presentation, and proves conclusively to the prospect the advantage of buying for quality rather than price. Copies of the standards card are available at two cents each from American Artisan.

Standards Cards Draw Crowds

Mr. Lacey says the standards cards have proved to be excellent conversation openers for interested prospects who are naturally hesitant about approaching the booth "cold" and asking vague questions about the company and equipment which they don't understand. The cards seem to stimulate interest and hold the prospects at the booth while the attendants lay the groundwork.

Ads Offer Free Passes

Pre-show promotion consists of newspaper ads that appear two weeks ahead of the home show. Some of the ads offer free passes to the home show. The passes, of course, must be picked up at the company showroom. This offer not only builds interest in the Home Furnace Co. display but also gives Mr. Lacey an opportunity to talk with prospects in the selling atmosphere of his showroom with its operating displays, manufacturers' literature and other sales aids.

Check-Lists Set The Stage

Another promotion activity that begins before the home show is the mailing of American Artisan's heating modernization check-lists (published in the March 1958 Modernization Issue) to an active mailing list of prospects for modernization work. These check-lists are reproduced on one side of a letter which invites prospects to examine their heating systems, compare their performance with the points listed on the checklist and bring the completed checklists to the home show, where company representatives will be on hand to discuss the points covered in the check-lists.

Salesmen Stress Comfort

The salesmen also use this opportunity to point out what can be done —via modernization—to improve the level of comfort in the prospects' homes.

This type of promotion is ideal for the Home Furnace Co., which specializes in modernization work, making about 80 percent of its installations in existing bomes.

Advise Future Home Owners

Check-lists for warm air heating systems are sent to prospective buyers of new homes with a letter that advises them to consider the points mentioned on the check-list when planning to build new homes. Frequently, people who are planning to build later in the year indicate that they will be interested in a heating system at that time. These people are usually quite receptive to a discussion of the principles set forth in the standards card because, as Mr. Lacey says, "They have already been introduced to the principles of good heating-it's only a matter now of pointing out how essential it is to apply these principles in the system being considered."

'Tickler' File Schedules Calls

Leads obtained during the home show are followed up as quickly as possible-in some cases, the next morning. If a prospect indicates that he will not be ready to talk heating for a week or longer, his name is entered in a "tickler" file for future contact. This file is broken down by date so appointments set up in advance will not be overlooked. When people decide, after leaving the booth, that they must wait longer than they previously intended (three or four months) to make their purchase, Mr. Lacey always tries to get some commitment or evidence of a sincere interest. Occasionally, he asks permission of modernization prospects to take measurements of the house so everything will be ready for presentation when they are ready to go ahead with their plans.

Mr. Lacey believes he has found an ideal promotion tool—a well-organized display capitalizing on the natural appeal of American Artisan's two sales aids—the *standards* card and the check lists.

THE HEATING, air conditioning and sheet metal check-lists published in the March American Artisan Modernization Issue can be used as direct mail pieces, for presentation by salesmen, as giveaway items for home shows, etc. Designed to remind home owners of their modernization needs, the two-color check-lists are available at the following prices:

Quantity	Cost
50	\$ 0.85
100	1.35
200	2.70
300	4.05
400	5.40
500	6.75
1000	13.50
2000	27.00
3000	37.00
4000	48.00
5000	59.00
Considerate courte or	en trun conte anch

	e Editors
	can Artisan
	Aichigan Ave.
Chicag	go 2, III.
Please	e rush the following quantities:
	—— Heating check-lists
	Summer air conditioning check-lists
	Sheet metal check-lists
	—— Standards for Rating Heating Systems cards
Enclos	sed is my check for \$ to cover reprinting costs. (Please print)
	Name
	Company
	Street Address
	City and State
I am	a dealer —— wholesaler —— manufacturer ——
other	



HEAT PUMP takes supply air for the outside air coil from ventilated attic space. Lower insulated duct discharges "used" air to the outside

MODERNIZATION OF existing heating systems—remodeling of the air distribution systems and replacement of furnaces with complete heating-cooling packages — in houses less than six years old has become a major business activity of many warm air heating dealer-contractors and has proved well worth the cost involved to home owners. The following case history describes such a modernization job completed recently in Atlanta.

This system is being used as a demonstration installation to point out to prospective buyers of year 'round systems that it may be to their advantage to have a complete modernization job rather than add-on air conditioning, which in this case would not have been satisfactory because the original system was not designed to handle the cooling load. This of course is not true in all cases but is one of the factors dealer-contractors must weigh in recommending the addition of summer air conditioning to existing warm air heating systems.

The house, a ranch style building with attached garage, has seven rooms on a concrete slab floor. The attic is 5 ft at the peak over the main section of the house. The distance between the garage ceiling and the roof peak is $7\frac{1}{2}$ ft. A trap door in the garage provides access to the attic. The garage has no doors.

Old Furnace Feeds 16 Diffusers

The original heating system included a gas-fired counterflow furnace in a closet. Heated air was supplied to 16 diffusers in the outside walls beneath or near windows from a radial trunk system embedded in the concrete floor. Six ceiling return air grilles connected to

Heat Pump Year 'Round



branches from a return trunk duct in the attic. This duct work was insulated with $1\frac{1}{2}$ in. thick blanket type insulation.

Nine Supplies, Two Returns Added

Modernization of this system required the addition of nine more supply openings and two additional returns to handle the air volume necessary for summer air conditioning. Supply openings, which could not be added at the perimeter because the house was built on a concrete slab, were cut along inside partition walls, fed from a supply duct system in the attic. The additional two returns needed were located in the ceiling.

An air-to-air heat pump was selected to replace the gas-fired furnace. The capacity of the heat pump is 60,000 Btu on the cooling cycle and 105,000 Btu at 10 F outdoor temperature for the heating cycle. The closet which had housed the furnace was too small for the heat pump, so the new equipment was installed in the 7½ ft space between the garage ceiling and the peak of the roof.

Heat Pump Installed in Attic

The trap door from the garage was enlarged to admit the 980 lb unit to the attic. After the unit had been set in its permanent location, this doorway was remodeled and a disappearing stairway installed.

The heat pump was hoisted with a sling and chain hoist fastened to a section of $1\frac{1}{2}$ in. pipe strapped across six rafters of the roof directly above the enlarged attic entrance. Regular strap iron and lightweight lag bolts were used to fasten the $1\frac{1}{2}$ in. pipe to each rafter. Once the heat pump had been hoisted to the attic space, it was set on $3\frac{1}{8} \times 4 \times 4$ in. angle iron sections laid across five of the garage ceiling joists. Spring type vibration absorbers

Installation Helps Sell

Modernization Jobs

"Demonstration" installation is visible proof to prospects of the advisability of complete modernization when the existing system is inadequate to handle add-on air conditioning

were installed to reduce noise transmission produced in operation of the mechanical equipment.

Outside Air Comes from Garage

To provide the 3400 cfm of outside air required by the air-to-air heat pump, five grilles were cut in the attic floor over the garage entrance. Because the garage does not have doors, a constant supply of outside air to meet the heat pump's requirements is assured. Otherwise, the grilles could have been cut into overhanging eaves outside the building walls. The grilles, selected to handle air at a velocity of 300 fpm, supply the volume required for the heat pump without producing air movement noise due to velocity as it enters the attic space.

The air discharged to the outside from the heat pump passes through an insulated duct which terminates at an outside grille in the vertical wall at one end of the attic.



ADDITIONAL SUPPLY air needed for glass-walled recreation room is provided by adding high wall register near outside wall

This air is discharged at a velocity of approximately 850 fpm. Weather-resistant louvers in the grille prevent rain from beating into the discharge duct. The grille is ornamentally camouflaged to preserve the original appearance of the wall. No complaints have been reported about the velocity of the air discharged over the driveway.

Old Plenum Becomes Supply Duct

Modernization of the air distribution system called for a trunk duct capacity of 2000 cfm. The main supply trunk splits shortly after leaving the air conditioner. One trunk supplies air to the six new diffusers located in



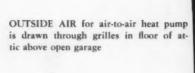
EXTRA AIR quantity needed to meet summer requirements is supplied through new register connected to new duct brought through closet

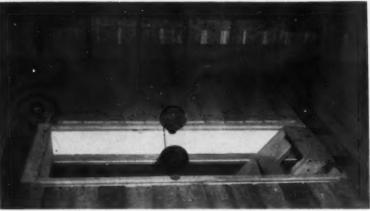


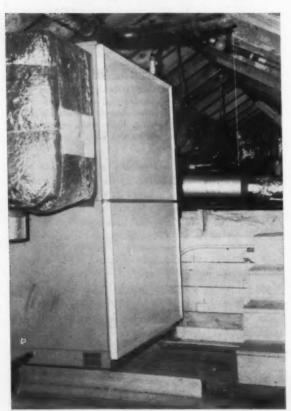
NEW RETURN air duct and opening were added by lowering the ceiling in a connecting hallway which adjoins several rooms



DISCHARGE AIR grille is located inconspicuously as possible and camoflaged with shrubbery. Air discharges over driveway







FOUNDATION for heat pump consists of 7 ft lengths of 4×4 in. angle iron laid across joists. Unit rests on spring type mounting bases

the partition wall; a second trunk connects to the original duct system in the slab floor to supply the original 16 diffusers. This trunk was connected to the slab duct system by converting the old furnace plenum (located in the closet) to a downcomer duct. The supply trunk that feeds the six new registers is a graduated duct system, which was selected over an extended plenum arrangement because it provides the required velocity at each register outlet to mix conditioned air with room air.

The discharge air velocity was carefully calculated to avoid drafts as well as maintain even room temperatures.

The six new registers are $6\frac{1}{2}$ ft above the floor level on partition walls, as close as possible to outside walls to direct air streams toward high heat loss or heat gain areas. In several cases, openings were cut in clothes closet ceilings and the duct brought down to the $6\frac{1}{2}$ ft level before the hole was cut in the partition wall. In several other cases, the ceilings in halls between rooms were lowered and ducts were installed between the original and new ceilings. Ducts brought into this space were turned horizontally to the register openings in the partitions.

In both cases, the new return openings were cut in the lowered hallway ceilings so they could serve more than one room. The new return ducts were connected to the modified existing return air system. All duct work in the attic was insulated against excessive heat gain or loss.

Makeup air for the air distribution system is taken from the attic space into the return duct through an 8 in. round collar containing a manually-controlled damper which is adjusted to provide 10 percent outside air.

A condensate drain connected to the bottom of the heat pump runs through the garage to an outside rock well which is an 18 in. deep hole filled with medium sized rocks and covered with a perforated metal plate.

Ample Work Space in Attic

There were two reasons for locating the heat pump in the attic space above the garage: 1) ample space was available for installation work by mechanics and for periodic inspection of the equipment by servicemen; and 2) the location provides for an adequate air flow through the attic space. The attic air is approximately the same temperature as the outdoor air because of the volume used. This reduces the heat gain normally to be expected through an insulated ceiling where the attic is ventilated.

All duct connections to the equipment, for supply and return ducts of the air distribution system as well as the discharge air duct to the outside, are flexible. The duct connections are enclosed in the insulation covering the duct system.

42

12 Points Add Up to Productive Air Conditioning Advertisements



Here's how to get full results from modernization advertisements in your local newspaper

THE INTENSE COMPETITION which prevails in all areas of business activity has produced some remarkable new ideas and variations of old ideas for telling the product story. Warm air heating-residential air conditioning-sheet metal dealer-contractors themselves have come up with some highly effective promotion ideas for their products.

Regardless of the technique used, advertisements placed in local newspapers continue to produce as many or more prospects than any other medium of promotion, per dollar expended.

A wealth of ready-made ad mats featuring summer air conditioning is available from manufacturers, wholesalers, associations, and national promotion organizations such as Home Improvement Council.

However, there are times when such general ads don't quite meet a dealer-contractor's needs, and he feels his newspaper ad campaign should be a little more personal, or specific, to tell his particular story.

The summer air conditioning check-list, published in the March Modernization Issue, is a natural subject for a dealer-contractor's summer modernization advertisements in his local newspaper. It shows the home owner what needs to be done to his air distribution system to provide summer comfort.

Following are 12 points which should be considered by the dealer-contractor who elects to produce his own modernization advertising campaign to increase his summer air conditioning sales volume. These considerations are presented as check points to keep the dealer-contractor on the right track to effective advertising based on the air conditioning check-lists. Obviously, each point must be considered from the standpoint of location, type and size of operation, budget, market to be reached and other individual factors which vary among dealer-contractors.

ARE YOU ELIGIBLE FOR SUMMER COMFORT?



Chances are, a few minor alterations in your existing heating system will qualify your home and family for all the advantages of central summer air conditioning

Remember the sweltering days and sleepless nights in your home last summer?

Banish discomfort from your home now with clean, cool, dehumidified air supplied through your heating system ducts by a central summer air conditioning unit. No home need be without the advantages of controlled comfort 24 hours a day



Send for this free check-list today to see what's needed to beat the stifling heat in your home Please rush me a Summer Air Conditioning Chock-List so I can analyze my modernization needs before the next heat wave

Name

Addres

City

YOUR COMPANY NAME

123 South Main St.

Phone 5-6789

SAMPLE AD meets requirements for effective modernization advertising: question headline intrigues reader; illustration depicts comfort; copy amplifies theme, suggests reader action; signature associates company name with summer comfort theme of the ad. Dimensions are standard, can be adapted to any size ad

1. Subject

The accent is on comfort, not machinery. Home owners who remember—or are experiencing—the discomforts of stifling days and nights will respond to a promise of cool, clean, circulated and dehumidified air a lot faster than to a brand name or technical dissertation.

American Artisan's Summer Air Conditioning Check-List, which is institutional in nature, is an ideal subject for a cooperative advertising program. It spells out the requirements for summer comfort, adding impact to the selling message, and prompting the reader to take action.

2. Market

The area to be covered with modernization promotion, and the estimated productivity of the leads he expects to uncover must be the dealer-contractor's first consideration, because it affects most of the other points to be weighed. The problem differs with locality, of course; the small town dealer-contractor will want and can handle all the business he can extract from the community. On the other hand, a firm in a large city must weight the factors of distance, competition, type and number of residences, extent of coverage by local newspapers and other factors before it can define the market area it can promote practically. Time and distance factors involved in handling many remote jobs can nullify profit. However, if competition is severe or home owners are largely in low income brackets in his immediate area, the dealer-contractor may have to cover a larger territory to get more leads.

Once he has his sights set on what he considers a productive area, his problem becomes that of finding the neighborhood or sectional newspaper or supplement whose circulation most nearly coincides with the geographical area he has selected. Circulation figures are published in all newspapers. Circulation and advertising departments of each paper will also help him.

3. Cost

The amount of money he can and should spend to bring the highest ratio of return is also of paramount importance to the dealer-contractor. It depends on cash available, the extent of other types of promotion employed, the degree of concentration on summer air conditioning the company plans to apply, the ability of the firm to handle the leads which are produced and other factors. The cost factor was covered in detail in an article in the June issue, entitled Budgeting Makes the Most of Modernization Advertising, which offers suggestions based on successful sales promotion campaigns.

Don't overlook the possibility of sharing costs with the manufacturer, wholesaler, local association or other dealer-contractors, or taking advantage of advertising mats and copy suggestions available from these and other sources. Cooperative advertising brings the dealer-contractor more for his money, in size and number of insertions. True, he must share the rewards if the venture is in cooperation with other dealer-contractors, but a little planning can minimize overlapping of market areas.

4. Frequency

Agreed that newspaper advertisements feauring summer air conditioning should be concentrated ahead of and following the peak season, how often should ads be run? If newspaper advertising is the only form of promotion used and if the business is geared to handle as much work as can be found, this is the time to pull out all stops and run as many ads as the budget allows. Everybody knows about summer air conditioning by now, and constant reminders, increasing numbers of satisfied owners and vivid descriptions of the benefits to be gained will kindle public desire for summer comfort and dispel apprehensions about price. Daily insertions in the paper or papers selected not only reach more prospects but also keep the idea of summer comfort fresh in the minds of regular readers. This subject was also covered fully in the article on advertising budgets in the June issue.

5. Size

The budget will be the determining factor in selecting the size of the advertisements, once frequency of insertions has been determined. Of course, a full page ad would be ideal, but this would not be practical for many residential air conditioning dealer-contractors. Short of a full page, the size of the ad diminishes in importance, down to a certain point. A two-column ad 5 to 7 in. deep, attractively presented and separated as far as possible from other advertisements will hold its own in any newspaper. Size can be varied, depending on the function of the ad. A new or special promotion, for example, would be introduced via a large ad and followed up with smaller "reminder" insertions at regular intervals throughout the campaign.

6. Position

The importance of right-hand pages, outside columns and other "preferred" positions is a controversial point among advertising experts, and some publications charge extra for special positions. It's best to have the ad located near some special interest reading such as sports pages, comic sections, important news stories, ladies' pages or other well-read features, depending on the availability of these positions and on the audience to which the ad is slanted. If the advertiser has no choice, or if he knows his ad is to be thrown in with others of about the same size (newspapers try to keep competitive ads on similar products as far apart as possible), its pulling power can be increased by setting it apart from the others through special emphasis on the following three factors.

7. Layout

This term applies to the positioning of the elements—headline, copy, illustrations and signature—attractively and forcefully, in such a manner as to catch and direct the reader's eye from one element to another within the ad. White space, used intelligently, can add emphasis to type and illustrations—it's not necessary or wise to jam type into every available area of the ad. The elements should balance; type, and even white space, can be used to balance illustrations. Eye camera studies have proved that the eye travels normally from left to right and downward, so elements should be placed to take advantage of the natural movement. The company name and address are usually located prominently at the bottom of the ad and can be used effectively to balance the "heavy" illustrations and headlines at the top.

8. Headline

All other things being equal, the headline can make or break the advertisement from the standpoint of arresting the reader's attention away from other ads on the same page or spread. Attractive and unique layout can draw the eye to the ad, but the headline has practically the sole responsibility of stopping the eye and arousing the scanner's interest to the point where he wants to find out more. The head should be brief, in large bold face type, and intriguing. If possible, find a "gimmick" to use in the head-play on words, current event, weather, a question or any other feature that will make the modernization ad just a little more enticing than the others on the page. A question (see sample ad) is an excellent tool for leading the reader into the ad. Obviously, it should be a question which arouses the reader's interest and one which requires further reading to find the answer.

9. Illustrations

In a small ad, one illustration is usually sufficient; in fact, if other techniques such as reverse blocks (white lettering in a black block) and Ben Day (gray) areas are used decoratively, an illustration may not be needed. However, an appropriate illustration can do a lot toward conveying the comfort theme. A reproduction of the Summer Air Conditioning Check-List itself would be an excellent illustration if the check-lists are to be offered to readers. Line or wash drawings symbolizing the summer comfort theme can be obtained from the newspaper office or made to order by an artist. The closer the illustration ties in with the head, the more effective the ad will be.

10. Copy

This is where the real "pitch" is made for summer air conditioning. The major elements have brought the reader to the sales presentation. He's interested or he wouldn't be reading the "small print." The job of the selling message is to develop his interest and get him to contact the firm for more information. Therefore, the message should be clear, concise, hard sell copy which promises a benefit, and sells this benefit well enough to prompt the reader to take action. Make it easy for him to get in touch with you. A coupon is the best device for encouraging reader response, but position, space and other limitations may rule out the use of a coupon. The Summer Air Conditioning Check-List fills the bill nicely as "bait" for reader response. A few words about how the home owner can use it to check his summer modernization needs should bring response.

The copy should be well-worded and brief enough so it does not present a reading chore for the newspaper scanner. It should be in as large type as possible and still tell the whole story in the space available, It's good to break up long blocks of copy with lists, ornaments or lines of bold face or italic type to avoid a monotonous appearance. The type should match the headline type and be light or bold enough so it will not overwhelm or be overwhelmed by the illustrations and headline.

11. Signature

The fourth element of the ad is the company name, address and telephone number. It should be conspicuously located at the bottom of the ad, in as large type as possible, consistent with the rest of the advertisement. This is the only reference the reader has for making his response and it should be prominent enough to register indelibly in the reader's mind, associated in his memory with the promise of comfort in the headline and illustration, even though he may not immediately respond to the ad. Here, too, is an opportunity to test the power and coverage of a particular advertisement. Many advertisers key their ads in different publications, or at different times, with variations in company address or department number. For example, a reply addressed to Dept. AC might mean the reader was responding to a summer air conditioning ad placed in the weekly neighborhood newspaper on June 18.

12. Effectiveness

After the campaign has expired in late fall, it would be wise to go over the entire insertion schedule and measure the individual effectiveness of each ad or series to establish a basis for next year's campaign. Discounting elements such as weather, vacations and other factors which would have affected response, which ads were responsible for the most leads? Did size, position, approach and publication used affect the lead-producing qualities of the ads? Was the campaign adequate; or on the other hand, did it produce more leads than the company could handle? Any adjustments made on the basis of review will pay off in increased effectiveness and economy in subsequent campaigns.

PRACTICAL APPLICATIONS

for engineering, installing and servicing



By S. W. Reid
Air Conditioning Engineer
Gilbert Associates, Inc.

The case of the Incomplete Cooling Proposals

Actual account of a small commercial air conditioning job emphasizes the responsibility of the dealer-contractor, not only to his own business, but also to the industry, to prepare careful and complete proposals which instill the confidence of the prospect

The owner of a factory decided he wanted to air condition his office. It was a small office, about 20 × 40 × 10 ft high. He was an informed man who knew he had two choices to get the project underway. He could either employ a consulting engineer to prepare plans and specifications which would be used as the basis for obtaining bids from air conditioning dealer-contractors or he could go to the dealer-contractors directly and ask for proposals. Since the job was small, he chose the latter approach.

Four dealer-contractors were called in, at different times. Their four different proposals are summarized as follows:

- Three proposals offered 5 hp air conditioners. One offered a 3 hp unit and guaranteed to maintain conditions.
- One of the 5 hp units was offered with an air cooled condenser.The other units were water cooled.
- 3) Three proposals included duct layouts. One showed the duct with ceiling diffusers down the center of the office. The other two showed the duct outside the long wall of the office. Of these, one showed three side wall registers while the other showed six.
- 4) One dealer-contractor located side wall registers high in an attempt to throw conditioned air over existing

fluorescent fixtures which are mounted 3 in. below the ceiling.

- One proposal located side wall registers so they would throw air under the lights.
- 6) Of the two submittals showing the supply duct outside the office wall, one showed insulation without a vapor barrier. The other made no mention of insulation.
- 7) One estimate figured 1100 watts for lights. Another figured 4500 watts. The other two called for 2800 watts.
- 8) One proposal multiplied the north window area by a factor of 110 to get solar heat gain. The other three showed no solar heat gain through these windows.
- One dealer-contractor said 7½
 cfm per person was enough air for
 ventilation. The other three specified
 cfm per person.
- 10) One proposal had a decimal point error which made one item 10 times larger than it should have been.
- All four calculations ignored process steam and condensate lines running the full length of the office.

These lines are hot constantly and are poorly insulated.

12) Two men used an inside design temperature of 78 F with an outside temperature of 95 F. The other two used short form calculations based upon 95 to 80 F but did not specifically mention temperatures.

13) None of the calculations showed any heat gain from the air conditioner blower motor.

Put yourself in the owner's place. You know nothing about air conditioning. You have on your desk four different and inconsistent proposals to air condition your office that will cost you up to \$3000. The next move is up to you.

Customer Calls for Help

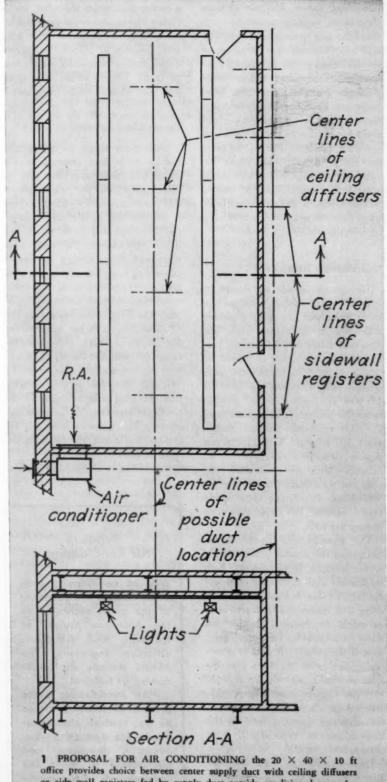
Since this case is based on actual facts, it is not necessary to imagine what the outcome was. The owner was thoroughly confused and rightly so. He knew some of the proposals were bound to be better than others -but which? To help him decide he called a consulting engineer for impartial advice.

Good engineering is based on facts -as many as are available. Some facts are established by direct observation, while others are derived from basic values by calculation. In either case, care and good judgment are essential if the conclusions are to be correct.

The engineer started by questioning the owner about his requirements. What space is to be air conditioned? What temperature is to be maintained in the space? How many people normally occupy the office? What space has been allocated to the air conditioning unit? Are water, drain and power facilities available in the space chosen? Is there any objection to duct work in the conditioned space?

Short Forms Used Carelessly

The next step was to review the cooling load calculations. All four dealer-contractors had used printed, short-form, calculation sheets—the type with tables of factors to plug



or side wall registers fed by supply duct outside conditioned area. Accompanying proposal would describe advantages and disadvantages of each arrangement

into blank spaces. The use of these short-forms is quite acceptable provided the user understands them. The man who inserted the 110 value in the calculation to determine solar heat gain through glass areas on a north exposure was not using good judgment. He had evidently searched the solar heat factor table on his load sheet for a value to put in the blank space for this item. Finding no value for north exposure, he chose the value for northeast which he thought was close enough. This, of course, would apply to unshaded northeast glass only when the sun was shining on it in the morning.

Outdoor Air Ideas Vary

How much outside air should be entered in the cooling load calculation? This item can make a sizable difference in the overall load. The man who called for 71/2 cfm per person would provide, for 10 people, 10 \times 7.5 \times 1.08 \times 15 = 1215 Btuh sensible heat. The man who specified 15 cfm per person would provide twice this amount. In the former case, 7.5 cfm represents an air change every 107 minutes. With 15 cfm per person, there is a change every 53 minutes. With the industrial type sash and with normal traffic through two doors, infiltration alone could easily amount to more than one change per hour.

The recommended procedure for estimating the amount of outside air to be admitted is to calculate both infiltration and ventilation and use the larger value. It should be kept in mind that commercial dampers such as might be installed in this job allow considerable leakage. Therefore, if the outside air duct is generously sized with the idea that the flow of outside air will be reduced with the damper, it may be possible that leakage alone will be more than the minimum quantity used in the load calculation, especially if it is unreasonably small.

There was no way to tell from the figures on the four load calculation sheets why the light wattages used varied from 1100 to 4500 watts. The lights were in place, and it was only

a matter of counting the tubes, multiplying by the wattage of each and by an additional factor for heat gain from ballasts to obtain the correct figure. Ballast allowances usually run 20 to 25 percent of the lamp wattages and should not be overlooked.

Steam Lines Ignored

Short form sheets do not usually itemize such heat sources as the steam and condensate lines such as those which run the full length of this particular factory office. Perhaps it was for this reason that none of the four calculations included this item. Nevertheless, the lines were there and contributed a substantial amount of heat. For example, a 2 in. pipe covered with 1 in. of 85 percent magnesia insulation and carrying 80 psig, 324 lb of steam has a heat loss of about 0.31 Btuh per linear ft per deg F temperature difference between the pipe and the air. Thus, 40 ft of pipe \times 0.31 \times (324 - 80 F) = 3026 Btuh. Add to this the gain from the condensate pipe, and the total is substantial. Methods for calculating heat gains such as this for various insulations are given in the ASHAE Guide.

In addition to overlooking the heat

What Is 'Air Conditioning'?

True air conditioning provides comfort in all seasons of the year, according to the American Society of Heating and Air-Conditioning Engineers. The ASHAE defines air conditioning as follows:

"Air conditioning is the process of treating air so as to control simultaneously its temperature, humidity, cleanliness and distribution to meet the requirements of the conditioned space."

gain from the hot pipes, none of the estimators showed any item for motor heat, although all forms included a blank space identified for this entry. This item is small, but small items add up. If all were ignored, there would be no true total. The fan motor of a 5 hp packaged air conditioner might be 1/2 hp. Since it is usually located in the conditioned air stream, all its input becomes part of the cooling load. In this case it is close enough to multiply the horsepower by 2545 to obtain Btuh. Thus, the 1/2 hp motor will contribute 0.5 \times 2545 = 1272 Btuh to the office cooling load.

When all errors and omissions in the various cooling load calculations were accounted for, the engineer was able to show substantial agreement between them. The owner was then able to see which dealer-contractor had used the most care in making his analysis. Needless to say, the experience pointed up the importance of this phase of a proposal in establishing customer confidence.

Choose Oversized Unit

The actual cooling load in this case fell between the capacities of a 3 and a 5 ton unit. The final choice was a 5 ton unit operating with reduced air flow. Thus, the unit would create fewer air changes and would tend to run longer with a higher percentage of latent heat capacity than would the unit with full air flow. All these consequences of reduced air flow were desirable for this job.

The next question to be settled was whether or not an air cooled condenser should be used. The office is in a factory building in an industrial part of the city. City regulations permitted connecting units up through 5 tons to the water supply and sewer. Since the office and unit were on the third floor of a five story building, there appeared to be no good place for an air cooled condenser. The additional fact that the owner was told he would get somewhat less Btu per watt with the air cooled unit than with the water cooled unit clinched the decision in favor of water as the cooling medium.

The proposals for air distribution were studied by the engineer. Should the registers be in the side wall or should ceiling diffusers be used? A check of the arrangement using three side wall registers showed that the registers had been selected for very low velocities and that the air stream would drop into the occupied zone (from the floor to the 5 ft level) less than half way across the room. The drop is a function not only of the distance from the register but also of the temperature difference between the conditioned air and the room.

Studies of several other arrangements indicated that at least six registers were required if side wall distribution were to be used. These registers were selected to throw air about three quarters of the room width before the air stream entered the occupied zone. They were also selected for velocities which would not cause objectionable noise for the intended service.

Light Fixtures Pose Problem

The fluorescent fixtures suspended 3 in. below the ceiling created a drawback to the side wall register distribution. It was felt that locating the registers high in an attempt to throw the conditioned air over the lights would surely cause part of the air stream to deflect downward from the lights. The best solution seemed to be to locate the registers so their tops would be at the same elevation as the bottoms of the lights. This would permit a horizontal throw under the lights and possibly deflect a part of the stream upward and over the lights.

Duct Insulation Stressed

The side wall register arrangement required that the conditioned air duct be outside the conditioned space, in the manufacturing area. The engineer noted that only one proposal specified insulation, and this proposal indicated that a vapor barrier was not necessary. The engineer took exception to this, pointing out that the dew point of the duct surface would be about 60 F. Sur-

THIS SPECIAL SERIES

. . . on subjects of interest to residential air conditioning dealer-contractors is based on the author's wide experience and on constant analysis of the field by American Artisan's editors.

IT ALL BEGAN

... with a complete rundown on fundamentals in 20 articles beginning in August, 1952 American Artisan, describing basic operations of air conditioning equipment.

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... treated in the next phase of the series covered maintenance, service, installation and management.

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. . . to solve common problems which have been experienced by the author and by dealer-contractors are covered in the current selection of case histories, procedure outlines and specific examples.

rounding the duct would be air ranging up to outside design conditions of 95 F db, 78 F wb which has a dew point of 72 F. It would be possible, therefore, for vapor to permeate the glass fiber insulation and condense on the metal. This would eventually lower the insulating qualities of the insulation, which would show up as a loss in cooling capacity. Incidentally, no load calculation made any allowance for heat gain through the ducts.

Having established the requirements for proper side wall air distribution, the engineer then reviewed the proposal for distributing the air through ceiling diffusers fed by a duct down the center of the room. He found that four diffusers were required. These were selected with consideration for noise level, length and pattern of throw and mounting height. In this case, it was possible to plan on a duct wide enough to extend at least 6 in. beyond the edge of each diffuser to provide the "ceiling effect" which tends to keep the air stream high. Diffusers would be located to direct the air beneath the lights.

Ceiling Diffusers Chosen

A check with one of the dealercontractors revealed that the additional cost of ceiling diffusers versus side wall registers was about counterbalanced by the fact that the center duct would not require insulation since it would be within the conditioned space. This fact, coupled with a reasonable assurance that in this case, ceiling diffusers would provide more draft-free distribution than would side wall registers, led the owner to choose the former.

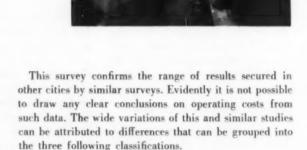
The problem of returning air to the conditioner is sometimes more difficult to solve than is the problem of distributing conditioned air. In this particular case, because the unit was located on the outside of the east partition of the office, it was possible to return air directly through a grille and short connection. This connection, like the outside air duct, was provided with a damper for proportioning the outside and return air. Flexible joints were included in all duct connections to the unit to prevent vibration carryover to the duct.

Although this article is based on only one actual experience, it is not unusual. It serves to point up the need for more care in the preparation of designs. Errors, omissions and poor judgment may not be apparent to an inexperienced customer or prospect if he considers only one proposal. However, when he shops around and affords himself the opportunity to compare several propositions, inconsistencies stand out like the proverbial sore thumb, and he loses confidence in the entire industry.

WHAT DOES IT COST TO OPERATE SUMMER AIR CONDITIONING?

Here are some survey results showing the effects of the human factor on power consumption which supply some logical answers to the often-heard question about operating costs

By Ralph A. Gonzalez*
Director of Technical Services
Airtemp Div., Chrysler Corp.



EVER SINCE THE EARLY DAYS of residential air conditioning, one of the most frequently asked questions has been, "What will it cost to operate?" Today however, because of the large number of residential installations that have been made, it is more pertinent to rephrase the question as, "What does it cost to operate residential air conditioning?"

The question is particularly important when asked by a prospective customer. When we have the attention of a prospect, we particularly want useful answers to the questions. Now that we have an important question before us, let's take a look at the available facts.

Many Cost Surveys Made

Many field surveys and studies of actual operating costs have been made on existing installations. An example is a summary of the operating costs of thirteen 3 hp installations gathered by the Truog and Nichols organization of Kansas City for the 1955 season. Their survey covered installations ranging from 2 to 8 hp. This summary, based on 3 hp units, shows the range and variation of results that were also recorded on the other sizes.

Name	KW	us	ed	1			T	en	ap	e	ra	tu	re	1	m	ai	nt	tained normally (deg l
McCaughy	. 15	20																76
Boley	. 18	000																78
Douglas	. 22	00																80
Baldwin	. 22	80																72
Woolf	. 24	00																
Larkin	. 30	000																
Olson	. 38	100																
Heining	. 38																	
Goldstein	. 40	000																
Hodson	. 42	00																
Fitzgerald	. 46	00																81
Shotwell	. 50	140																76
Lorenz		40						6.6										

Three Factors Account for Variations

- There can be significant differences in the heat gain of various houses of the same floor area, due to variations in construction, insulation, amount of glass, orientation and shading.
- 2) There can be differences in cooling capacities and corresponding power consumptions by different equipment and such differences as exist can be magnified by the installation methods and details.
- 3) There can be considerable differences in the way different home owners operate their equipment.

From a practical standpoint, the facts remain that there are wide variations in power usage for residential purposes. In addition, no explanation of these variations has been proved to the point of acceptability. Yet, this matter of operating costs is of very real importance to prospective purchasers and to the mortgage underwriting people of the governmental agencies and private concerns.

Ideal Conditions Required

Were it possible to evaluate the extent of variation that is caused by the ways different home owners operate their

[•] From an address presented at the second technical conference of the National Warm Air Heating and Air Conditioning Association.

TABLE 1 — SUMMARY OF DATA taken from three groups of test houses represents typical conditions in various geographical areas

	CASE 1	CASE 2	CASE 3
DESCRIPTION	12 houses in Haddonfield, N.J.	12 houses in Dallas, Tex.	Eight houses in Tulsa, Okla.
CONSTRUCTION	1100 sq ft, slab on ground, single story	1150 sq ft, slab on ground, single story	1200 sq ft, slab on ground, single story
INSULATION	Triple reflective in ceiling, single reflective in walls	3 in. fill in ceiling, 2 in. batt in walls	2 in. batt in ceiling, $1/2$ in. sheathing in walls
COOLING EQUIPMENT	Air cooled condensing units, nominal 2 hp, rated at 1.76 tons at current ASRE test conditions	Water cooled condensing units, nominal 2 hp, with cooling towers	Air cooled condensing units, nominal 3 hp, rated at 2.76 tons at current ASRE test con- ditions
ORIENTATION	Tested houses face south- west	Tested houses face south- west	Tested houses face south, large glass areas on north
TYPE OF COOKING SERVICE	Gas	Gas	Electric
TYPE OF HOT WATER HEATING	Gas	Gas	Gas
YEAR OF TEST DATA	1955 (second season of occupancy)	1953 (second season of occupancy)	1955 (first season of occu- pancy)

equipment, we would be considerably closer to a practical evaluation of one of the most important facts of this problem. We could get such data if we could attain ideal conditions.

Suppose we had a row of houses, all built at the same time with the same floor plan, the same insulation, the same amount of glass, same orientation and the same cooking and hot water heating equipment. Then suppose that all of these houses are air conditioned with identical equipment of the same manufacture. Now, if several different families move into these houses and operate their air conditioning to suit themselves, we should be able to get an indication of the variation in power usage for summer air conditioning due to the way the people vary in their use of the equipment. As all the other variables have been reduced to a minimum, the variations attributable to occupants should certainly be the major factor in the differences between the power usage under these circumstances.

Projects Provide Good Studies

The construction of housing project communities of air conditioned houses has provided practically the ideal test conditions outlined in the preceding paragraph. It is necessary only to select groups of houses having the same floor plan, orientation and equipment to minimize the variables to the point where variations in power use must be attributed mainly to the ways different householders operate the equipment. Three groups of houses on which data has been secured have a considerable geographic distribution. Information on these houses is summarized in Table 1 at the top of this page.

Control House Provides Comparison

In Case 1 of Table 1, data for houses without summer air conditioning in the Haddonfield, N.J. area was obtained from a "control house" in the same row as the tested houses. The accumulated data indicates that the control residence used the same average rate of electrical current for the summer months as was used during the "non-air conditioning" months of April, May, June and October.

It is also interesting to note that there is a considerable variation in the amount of electrical energy consumed in the various homes during the non-air conditioning months. This variation is fairly constant. That is, each home appears to show an individual pattern with regard to the amount of energy used per month in the non-air conditioning months.

Data from the groups of houses in Cases 2 and 3 of Table 1 also shows a wide variation in power consumption for air conditioning which can be attributed to the ways the individual home owners operated their equipment.

Table 2 is a summary of the calculated kilowatt hours of operation of summer air conditioning equipment for the three groups of houses.

Four Factors Stand Out

The study clearly shows that wide variations in power consumption for air conditioning do occur even when all differences in heat gain and equipment performance are eliminated, or at least minimized. These investigations further indicate the following points:

1) There are wide variations in power used for air conditioning just as there are variations in residential power used for other purposes in identical houses. The "low" consumers used less than half as much power for air conditioning as did the "high" consumers in identical houses.

2) There is no definite relationship between the power used for air conditioning and for non-air conditioning purposes. In other words, the higher power consumers in the non-air conditioning months are not always the high users of power for air conditioning.

3) Many home owners are continually adjusting operating time manually on their own air conditioning equipment. There is no evidence that the usage variations are motivated by reasons of economy any more than by reasons of personal preference. In other words, if economy were the major consideration, the power consumed for air conditioning would probably bear a closer relationship to the power consumed for other purposes.

4) The variations in power use due to the operating preferences of the home owners are currently of such magnitude that field testing for differences in equipment and construction effects cannot be expected to yield conclusive answers.

How Is Information Applied?

But how does this information help us answer the question, "What does it cost to operate residential air conditioning?"

For those who have a scientific and academic interest in the subject, the foregoing studies will demonstrate that residential operating costs are currently very much influenced by the human factor.

From the standpoint of answering the prospective purchaser's question, we now can prove that there is no accurate dollars-and-cents answer. With this and other information we have, we can evaluate the question as a sales problem. Among the other important items of information that we already have on this subject, the following are particularly significant.

 Owners of residential air conditioning practically never complain of operating costs.

(2) Analytical owners frequently find their operating costs are offset by savings in other categories of expense.

Owners Don't Complain About Costs

From a sales standpoint, we are more concerned with what motivates the prospect's question than we are with the question itself. In the majority of cases, the prospective purchaser is expressing a concern or a fear that, if

TABLE 2 — VARIATIONS in calculated Kwh consumption by summer air conditioning in three groups of houses during July, August and September cooling season can be largely attributed to human factor

6	C	C	Variat	Variations (Percentage)						
Group 1 (Haddonfield)	Group (Dallas)	Group (Tulsa)	Group	Group 2	Group 3					
2755	4759	4320	100	100	100					
2696	4704	4059	98	99	94					
2553	4199	3681	93	92	85					
2357	3556	3680	86	78	85					
1524	3316	3133	55	73	72					
1425	3182	2904	52	70	67					
1419	3045	2401	52	67	56					
1236	2885	2093	45	63	48					
694	2639		25	58	- 1					
643	2625		23	58	20.1					
	2224			49						
	1972			43						

he does purchase the equipment, he will later find the operating costs so high that he will not be able to enjoy the benefits of his purchase. From the experiences of many users, we have the unqualified assurance that operating costs are not a subject of complaint among owners of residential air conditioning.

It is interesting to note that with all the wide variations in operating costs given in Table 2, none of the owners raised any issue with the installer or power companies over comparisons with neighbors' costs.

No New Answers

So how should the situation be handled when the prospect asks about operating costs? The answer appears to be very much as it has been handled in the past.

One of the many effective methods dealer-contractors have reported is mentioning the operating costs of installations in the same area. More often than not, the prospect reasons that if a certain neighbor does not find the operation of air conditioning equipment a financial burden, there is no reason why he himself will find it so.

Turn Discussion To Savings

Another frequently-used approach is mentioning the cost of operation per hour. This figure can be quite accurately stated and is a good starting point for introducing the thought that the savings realized as a result of having air conditioning in the home are frequently greater than the cost of operation.

In many areas, it is possible to handle the question with a comparison to the heating costs. In all cases, answering the prospect's question about operating costs can double as a springboard for introducing facts about the savings which can be attributed to ownership of central summer air conditioning.

On the basis of the tests we have described, we can see that answering the prospect's question about operating costs is a sales challenge and a sales problem. Properly handled, the question can be turned into an advance toward the sale of a summer air conditioning system.

"LETTERS TO THE EDITOR"

AIM 'Audit' Draws More Comments from the Industry

Here are some additional remarks by industry leaders about the American Institute of Management's criticism of the warm air heating industry and American Artisan's April editorial



the matter.—G. W. Denges, Vice President, The Williamson Co.

"Fail to Obtain Fair Return"

THE WRITER appreciates your editorial relative to the AIM audit. I do not agree, of course, with the AIM that the entire warm air heating industry has failed to perform properly. Such an opinion, however, can readily be assumed if the "failure" was the result of an analysis of the industry's profit and loss statements. There has been and is a failure on the part of every level from manufacturer to installer to obtain a fair return for the product or the service. That our industry has devoted more time to the technical side rather than the merchandising side is evident. All the technical information in the world becomes worthless unless it can be converted into a profitable sale.—E. A. EICHENBERGER, Vice President, F. Meyer & Bro. Co.

"We Need a 'Blockbuster'"

The only comment that I can make about the American Artisan editorial, "Let's 'Audit' That 'Industry Audit'", is that the AIM audit is, on the whole, essentially accurate and what you have become indignant about is the degree of accuracy of certain details. Certainly the industry has made technological progress through the ingenuity of its manufacturing leaders and the Association. In fact, the ingenuity of the leading manufacturers constantly amazes me when you consider the small increase in price that they have gotten for their improved products—compared to other consumer products— in these recent inflationary years. And, of course, I take my hat off to the sincere, honest and capable craftsmen who,

EARLIER THIS YEAR, the American Institute of Management issued its second "audit" taking the warm air heating industry to task for "failure to perform properly." In its April editorial, American Artisan analyzed the report, contradicting some of the statements on which the institute based its criticism, at the same time recognizing that shortcomings do exist in our industry as in all other industries, and that well-founded criticism is valuable. The issue, then, is not the criticism itself, but rather some of the premises on which the verdict was founded.

Pro and con comments from many industry leaders have been received by American Artisan, and four pages of their letters were published in the June issue. Following are additional letters containing interesting comments on the subject:

"Good Systems Can Be Sold"

WE CERTAINLY CONCUR with the viewpoint you have taken, even though we all know that there can be considerable improvement within the various functions of our industry. We are not too disturbed by the AIM report as we feel it would be possible to make a similar report on almost any industry selected and the fact that our industry does recognize its problems and has been and still is taking steps to overcome our problems, is more than can be said of some other industries.

In spite of the highly competitive conditions which exist in our industry, we still find that good heating and cooling can be sold and our complaints and field servicing have actually reduced as a result of better engineering and merchandising.

We again want to commend you for your editorial and for the forthright position which you have taken in by installing good systems, have advanced the cause of warm air heating.

However, all of this doesn't compensate for the inadequate job that manufacturers, dealers and promotional people in general have done to create desire and demand for modern heating and cooling and to take the emphasis off price. Everything is relative, and you cannot gainsay the fact that half of the homes in this country do not have central heating and most of the homes with central heating have improperly functioning systems. Further, what has happened to the great central air conditioning business, the business that was to help the warm air heating dealers' summer slump? Less than 2 percent of the nation's homes enjoy the great benefits of central air conditioning. Contrast this poor selling performance with the public acceptance of automobiles, appliances, etc., the quick saturation many of these products receive, and the tremendous replacement business built up.

As a person who has been in the promotional end of this business for 10 years, I can say these things subjectively because they indicate my own difficulties in coping with the problem. At the same time, reports such as the AIM audit only seem to fire me up for added effort. No, the AIM report does not make me indignant. I think we need a "blockbuster" every once in awhile to make us work harder. And quite frankly, based on the total consumer promotion and selling job, I think our defenses are down.—J. W. Ream, Vice President in Charge, General Div., Klau-Van Pietersom-Dunlap, Inc., Advertising.

"If Shoe Fits, Wear It"

AMERICAN ARTISAN is to be congratulated for helping to awaken our industry.

I have read the recent AIM audit. My observations, and discussions with others in the industry, indicate that the audit is approximately accurate. Perhaps some exaggeration does appear as you point out, namely "failure of an entire industry to perform properly." This is strong language. Perhaps we need it.

In my opinion the AIM audit should be appreciated by all segments of the industry because it serves as a management check-list. As we say, "If the shoe fits, then wear it." Surely, every manufacturer, wholesaler, and contractor-dealer knows that both self-appraisal and industry-wide appraisal are needed today.

Frankly, I feel that our industry should be very much disturbed by its modernization-replacement sales performance. The sale of 50 percent of all furnaces for replacements means we are selling only 500,000 units annually. By the way, my own survey indicates the sale of less than 50 percent.

The potential annual replacement market is approximately 1,000,000 units, because approximately 17 million central warm air furnaces are in use. So if our industry should sell only 70 percent of the potential, we would install 700,000 units or 200,000 more than in any previous year.

Let's hope that we will sell a bigger percent this year

with the aid of such good tools as American Artisan's modernization issue, American Artisan's excellent checklists, and National Warm Air's Silver Shield program. Your "sparking" of thoughts on fundamental problems is good for all of us.—ROBERT V. MAIN, Sales Manager, Manufacturer Div., Viking Air Products.

"Your Points Well Taken"

RELATIVE TO American Artisan's editorial on the American Institute of Management's "industry audit of warm air heating," I believe your points were well taken and it certainly has been the object of the air conditioning companies that have entered the furnace business to promote and sell good air distribution systems, and especially within the last two years in going after the existing home market.

For your information, our residential heating and cooling business has swung from three years ago where about 65 percent of our equipment went into the new homes to about 45 percent in new homes last year and the balance in existing homes.—Burton T. Kehoe, Asst. to the General Manager, Unitary Equipment Div., Carrier Corp.

"Great Confidence In the Future"

I READ WITH A great deal of interest the April American Artisan editorial, "Let's 'Audit' That 'Industry Audit.'"

While in principle I don't agree with all the statements made in the American Institute of Management's audit, I have to admit — and I am sure others in our industry must also admit — their statements generally were true.

As one of the major spokesmen for the heating industry, I admire American Artisan's statements and analysis as given in your editorial, but I think it is time that those of us who are in the heating business to stay (and certainly we at Airtemp have a definite objective in that direction) recognize our own deficiencies whether they be brought to our attention through an audit made by an independent concern or that we face facts as we know them to be.

There are two segments in the heating business — new construction and replacement. For the past 10 years, the one ambition of the majority of manufacturers has been to see how cheaply they could build a product and how cheaply they could get it installed to capture the new construction market. You cannot have quality and price at the same time.

Financial statements of the manufacturers in the heating business — if available — would reveal that in the majority of cases the heating business has continually been a "loss" item or a very minor profit item. Continued increases in the cost of material and labor have had to be absorbed by the major manufacturers, in order to compete with the back-alley operators who have progressively crept into this heating business.

An AGA approval stamp or an Underwriters' label in no way guarantee performance, quality or integrity;

they merely certify that the piece of equipment tested meets certain operation standards.

An analysis of competitive furnaces built 10 years ago vs. competitive furnaces built today will show you very quickly that — while Btu ratings hold pretty much to needed approvals — quality for longevity has been depreciated to where today it is questionable which gives out first, the heat exchanger or the jacket.

In the new home market, the industry has allowed and in many cases encouraged their accounts — even to the extent of direct sales — to be chiseled down by builders. For what reason? It is a part of the home and regardless of what the price might be, the builder still gets it back from the customer.

The unethical competitiveness of the heating business is now beginning to show its influence in the air conditioning business.

Now I would like to ask you, as a spokesman for the industry, the same thing I am asked many times: What is there about our business today that sets up goals and opportunities to encourage investment in business at the sales-installation level? An analysis of the progress in the heating and air conditioning business over the past 10 years will show a high percentage of increase in manufacturers with no decrease or loss in the number of distributors, jobbers or installers.

The air conditioning and the heating business could be one of the best businesses to face present economical conditions that you could ask to be in, if the manufacturers will stiffen their backbones, instigate integrity and urge their dealers to be competitive, but profitable.

Maybe a few more articles such as that written by the AIM may awaken management in our business to just where these bad practices have put us.

I hope you will accept these remarks in the same spirit that they were written. We at Airtemp have great confidence in the future of the heating and air conditioning business, but we also recognize that this confidence, to be maintained, must carry with it a reasonable profit at all levels — manufacturing, distribution, and installing.—J. F. KNOFF, Vice President in Charge of Sales, Airtemp Div., Chrysler Corp.

"Glad To See Your Stand"

I WANT TO WRITE to you about your editorial in the April issue of the American Artisan, entitled "Let's 'Audit' That Industry 'Audit.'" I am certainly glad to see that you have taken your stand, and I think the article is very well done, pointing out some mistakes of AIM. There is enough skulduggery in the industry without somebody exaggerating those faults which we admit we have and will continue to have until the industry is geared up to "providing comfort in every room" . . . a certified installation, properly policed. To do this requires profits at all levels of distribution not only to pay this cost but also to provide funds necessary for advertising and promotion to win public confidence and acceptance — R. H. L. BECKER, Managing Director, Oil-Heat Institute of America.

"Won't Change Overnight"

I AM INCLINED to feel that Dr. Reich of the AIM came closer to making a valid analysis this year than previously. I am quite sure he was reflecting the feeling of many within our industry who were in position to express themselves to him.

This situation has been in the development stage for a number of years and certainly is not unknown to many who have been connected with the industry over a long period of time.

I am more concerned with the answer than I am anything else, but have pretty much come to the conclusion there is no distinct panacea at the moment.

Our industry is no different than many others, even though the condition as it exists today has existed for a much longer period of time than some others. The automobile industry in a good example. It started out with many and has now resolved itself into relatively few.

Even with all the money that the industry has spent on merchandising, it still is the producer of one of the worst products, at high prices, that could possibly exist. Furthermore, it too has had a serious distribution problem not recognized by, or perhaps even ignored by, the manufacturer — that is, the dealer at the local level. Even with the minor recession as it exists today, dealers are going broke daily because they must, in order to retain the franchise, work on an unprofitable margin.

All and all, I think the AIM has done a service to the industry by not hesitating to call a spade a spade. Circumstances as they exist today will not change overnight, but the report certainly has given all phases of the industry something to think about.—T. I. BYRD, President, The Lau Blower Co.

"Agree Wholeheartedly"

Personally, I acree wholeheartedly with your comments, and must commend you for having gone on record in defense of the warm air heating industry, although the items mentioned in the audit are true. — I. E. Seith, Sales Manager, Niagara Furnace Div., Forest City Foundries Co.

"We Must Be Alert"

I HAVE READ your editorial on the "industry audit report" by AIM.

Apparently the report was written for the consumption of the industry itself, and the people who gleefully accept such a report to justify their feeling sorry for themselves.

Research, engineering and the proper use of available facilities, plus all available markets, can make our industry just as profitable from the manufacturer's standpoint as any other. With the present competitive atmosphere running through our entire national economy, we cannot ignore the fact that we must be alert every minute.

I had read the report before, but not in self-pity. This year seems to be the best year in our history coming up, both in volume and profit, having exceeded our estimates each month. — R. C. JAYE, President, Syncromatic Corp.

Metal Cupola Specialty Keeps



CUPOLA LOCATED at top of a ranch style home architecturally complements the building's roof line. Choice in weather vane styles has proven an excellent sales aid

SELECTION OF A sheet metal specialty item to help maintain an even flow of work through the shop involves consideration of several points. The item must be moved at a profit, easy to fabricate, easy to stock and reasonably priced to supply a wide market and must have sales appeal within the local market area. Often, production of such a specialty is the result of requests from previous customers. This was the case with Moody Sheet Metal Co., Largo, Fla., which developed a profitable specialty business in small metal cupolas.

According to John C. Moody, owner of the company which employs six sheet metal workers, his first cupola was made at the request of a customer who wanted something different from the ridge ventilators being installed on most residences in the area. They decided a cupola designed to complement the architectural design of the distinctive houses would be the answer.

Weather Vane Adds Appeal

After designing and fabricating the basic cupola, the firm added an ornamental weather vane at the top. This added touch has attracted considerable interest among home owners and others who plan to build homes.

The line of cupolas meets all the requirements of a profitable specialty product. The cupola is largely made by hand from 26 ga zinc-bonded steel. Copper and stainless steel cupolas are also available. The firm has found that the zinc coated steel is well suited to spraying with enamel to match the colors of the houses upon which the cupolas are erected. Cupolas on new houses are usually painted by the general contractor or painting contractor. When the cupolas are erected on existing houses, the painting is done by the Moody company.

The cupolas are 30 in. square, and about 43 in. high. The weather vane on top can be selected by the customer from a number of various types and sizes. About 25 types of ornaments are available for the top of the weather vane. The ornaments, designed in the shape of boats, dogs, horses, fish, colonial figures and others, are cast aluminum and can be set upon the weather vane rod.

Bases Fit All Roofs

The cupolas are available with bases to fit flat roofs, pitch roofs and the tops of hip roofs. To assure a water-tight junction between cupola and roof, base flashing is first installed around the hole cut in the roof. This base flashing extends 5 in. under the roofing material and rises 5 in. vertically. All corners are soldered. The cupola base fits down over this base flashing and is soldered to form a watertight connection between the flashing and the cupola.

In the fabricating process, the cupola is divided into three major segments: top, center section and base section. The top section is about 18 in. high, the center section about 15 in., and the base section about 10 in. Because of the varying dimensions of the sections, Mr.

S.M. Shop on Full Time Schedule



SEPARATE ASSEMBLY AREA in one portion of the shop enables firm to assign available employees to work on any one of three cupola sections. Work can be started or stopped at any time, to utilize man-hours that might otherwise be wasted in the shop between jobs

Production of sheet metal cupolas with decorative weather vanes not only smooths out shop work but also brings in enough profit to warrant a new building with a separate cupola assembly room

Moody does not believe internal bracing is necessary. Therefore, all parts are fabricated from sheet metal braked and formed to provide rigid support of the entire cupola. Each of the four sides contains four metal louvers which, when placed into retaining brackets at each corner of the cupola, not only provide protection against driving rain, but also permit the escape of heated air from the ventilated space.

To provide a base for the weather vane rod, a 1/4 in. thick steel plate is placed near the top of the cupola. An ordinary 5/8 in. nut is welded into the center of the plate. The weather vane is screwed into the threaded rod.

As an extra feature, the back end of the louver is turned upward $\frac{1}{2}$ in. to prevent driving rain from entering the space under the top section of the cupola.

The louvers are fastened to the metal corner post with sheet metal screws which are soldered into place, as are the edges of the louvers. This keeps rain from the space between the corner post and the louver edge. Inside the cupola and behind the louvers ½ in. square insect and bird screen wire is installed.

All joints between sections are soldered to form one homogeneous part.

Specialty Work Builds Business

The increased demand for this specialty item has been largely responsible for Moody Sheet Metal Co.'s relocation from a side street to a well-traveled highway. The new building houses two offices, a large shop which is equipped with tools necessary for all types of sheet metal work, and an assembly room in which the cupolas can

be fabricated at varying rates to fill orders or to build inventories when other work falls off.

The cupola business has been responsible for two recent church spire jobs that may not otherwise have come to the attention of Mr. Moody. Among the other types of work performed by this company are duct work for summer air conditioning, heating and ventilating systems.

Because most of the buildings in the Largo area are single story, this type of ornamental product has a special appeal. Mr. Moody has installed them not only on ranch style houses which predominate in the area but also on motels, restaurants and other small commercial buildings.

Sidewalk Display Pulls Inquiries

Advertising consists primarily of a sidewalk display. Each day an array of the cupolas is arranged on the sidewalk near the building where passers will see them. An attractive folder describes ways in which the cupolas can be used to enhance the ornamental design of most buildings. When a prospect asks about a certain type of building, Mr. Moody or his assistant show him a number of photographs of actual installations which show how the basic cupola has been adopted to conform to the decor of a similar building.

Keeping in mind that a profitable specialty item must be reasonably priced to supply a wide market, Mr. Moody has priced the 30×30 in. cupola at \$85 installed. He says people who are interested in this method of ventilating their homes seldom consider shopping for a lower priced ventilator once the ornamental features of the cupola have been explained to them.

Mobile Shop



Steps Up Production Schedules



ALL AVAILABLE SPACE is utilized. Bins are above 8 ft hand brake, sheet racks are behind it. Shop designer R. C. Willoughby points out location of space saving devices

On-site fabrication of standard and special fittings for air distribution systems cuts costs, saves time and permits advance scheduling on a job-a-day basis

To reduce on the job costs and speed up erection time so schedules and commitments may be maintained, Willoughby Sheet Metal Co., Indianapolis, devised a mobile shop which has exceeded the original expectations. With the traveling shop one residential central heating system can be completely installed every day during the busy season.

A four-man crew now completes an installation in about eight hours. On this basis, R. C. Willoughby, owner of the company, can schedule his work closely, with reasonable assurance he will have no difficulty in keeping his commitments with customers.

When a four-man crew is sent with the mobile shop, the work is usually divided in this manner: One man working in the shop lays out and fabricates the duct sections and fittings. A second man takes these fittings to the basement or some other convenient location on the job site and assembles them. The other two men hang the duct system and make the openings for the registers, boots, etc.

The shop currently being used is the second made by the Willoughby company. It is 22 ft long, 7 ft wide and 78 in. high inside. It weighs 8700 lb and is drawn by a 3/4 ton truck. The sides of the shop are 22 ga galvanized iron. Channels are 14 ga sheet steel.

Shop Mounted on Dump Truck Frame

The shop is set on an I beam frame which rests on a dump truck body. Extra springs were installed to sup-



TEN FOOT BENCH gives shopman Thomas Sowell plenty of space to assemble duct sections. Note power lockformer in left foreground

port the added weight of the shop. To support the weight of the truck, heavy duty, 8 ply tires with 60 lb air pressure are used.

The shop has two sliding-door entrances, one on the right side near the front and the other at the rear. The side door is generally used for entering and leaving the truck and removing small fittings and sections of duct; large duct sections and odd shaped fittings are carried out through the rear door.

The shop contains an 8 ft hand brake, a lockformer, a cleat bender and all the hand tools normally needed in a sheet metal shop. The cleat bender is mounted on a swing support, which can be swung out in the aisle for use and swung back under the bench when not needed. Shearing is done with a portable electric hand shear.

Tap Available Power Sources

Electricity for operating the lockformer, electric drill and other electrical tools and for illumination is tapped from nearby electrical sources with a 300 ft coil of no. 14 rubber-covered wire. This wire is connected at temporary electric meters usually provided by the general contractor for service to new buildings. When this source of power is not available, it is necessary to make arrangements to tap into electrical power supply lines to other buildings in the area. The truck is lighted with fluorescent lights over the 10 ft bench and the 8 ft brake. Other lights and outlets are spotted inside the mobile shop as needed.

Another 300 ft coil of intercommunication wire connects a speaker and microphone set in the shop to a similar set in the basement or elsewhere in the building. When a workman in the basement requires a certain section of duct or fitting he "broadcasts" the dimensions and other needs to the man working in the shop without leaving his work.

The mobile shop fabricates duct sections up to 36 by 18 in., which includes most of the odd-shaped fittings previously turned out in the main shop. These fittings

previously had to be picked up by one of the installers or sent out in a truck. Either way, someone had to leave his work to transport the fittings to the job site. The mobile shop now makes it possible to start and complete the job on the spot.

Troubles Remedied Quickly

As Mr. Willoughby says, "Often after a duct layout has been completed, the sections made at the shop and delivered to the job, we discover a pipe or an electrical outlet or something else in the exact spot we planned to run a duct. This problem is easily overcome by the mobile shop crew, who can quickly fabricate an offset fitting to take it around the obstruction."

The traveling shop is stocked with about a ton of sheet iron, and about 1000 ft of nested 6 and 7 in. round ducts. The flat sheets are stored vertically behind the hand brake. The nested round ducts are stored in a space under the shop. Extra fittings, boots, etc. are stacked on wall shelves opposite the 10 ft work bench. Chicken screen wire prevents them from rolling out of their bins when the mobile shop is in motion. Also located under the shop are lockers for cement and sand to be used for furnace bases.

The four-year-old shop is taken annually to an automobile repair shop for a complete overhauling and paint job. In four years, only one major repair—a broken hitch rack—has been necessary. Most of the scratches on the mobile shop are made by trees. This is one reason it is necessary to repaint the shop once a year.

A centrifugal type blower in the front shop wall provides ventilation during the summer.

The mobile shop is not restricted to residential applications. Mr. Willoughby has used it several times when his firm provided ventilation systems and duct work for central summer air conditioning systems for commercial buildings. The firm does considerable sheet metal work for engineering firms which sell large cooling equipment but do not complete the installations.

Stainless Steel Plays Leading



INSIDE

ULTIMATE IN UTILITY and attractiveness are achieved with stainless steel in cafeteria kitchen

The owners insisted on a combination of beauty and utility, and they got it, with stainless steel applied wherever possible on exteriors and interiors



FLUTED PANELS FORM ELEVATOR SHAFT walls; smooth-surface stainless steel doors were selected for the elevators



LOBBY INTERIOR walls and columns are sheathed with fluted stainless steel sheets to provide attractive welcome for employees and guests

Role in Modern Office Building

AND OUT

WHEN THE AMERICAN Hardware Mutual Insurance Co. decided to build a new home office building in Minneapolis, its officers insisted on a modern appearance which would be maintained permanently. To achieve this objective, stainless steel was utilized wherever possible. Crown Iron Works Co., Minneapolis, was called in as advisor.

Two Main Elements

The building has two main elements: 1) a four story office unit, topped with a penthouse, and 2) a low wing comprising dining facilities and an auditorium with a garage beneath. Over 100,000 lb of stainless steel alone went into the supports for the glass panels used primarily as wall surfaces.

The penthouse has a stainless steel skin enclosing a meeting room for the board of directors, a lounge for informal meetings and housing for the elevators and air conditioning



CURTAIN WALL PANELS sheath both lower and upper portions of penthouse which contains a meeting room, lounge and machinery rooms

machinery. The elevator shafts are surrounded by fluted stainless steel panels with matching stainless steel doors and moulding.

Lobby Walls Are Stainless

In the lobby, fluted stainless steel panels are used for all interior walls and as covering for supporting columns. The stainless steel sheets were brake formed in the Crown Iron Works sheet metal shop.

The cafeteria, with a seating capacity of 135, has stainless steel counters and food dispensers. The kitchen is completely furnished with stainless steel equipment.

Guard panels on interior stairway railings are stainless steel mesh. All rail fittings and fastenings are also of stainless steel.

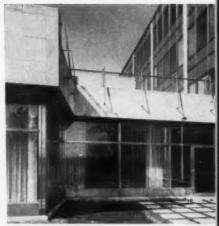
Exterior applications of stainless steel include the front entrance canopy ceiling, facings on the supporting columns for the canopy, and rails



CANOPY CEILING, vertical support coverings and hand rails employ stainless steel at main entrances to four story building



RAILS AND WIRE MESH screen combine safety with decorativeness to staircases



WINDOW RETAINERS, trim and cafeteria roof deck hand rails, all stainless steel, complete the exterior decor

"Recommended practices were followed to the letter in handling the materials to be sure that all equipment fabricated at the shop was installed in the same condition as when it left the shop"

surrounding the roof terrace for employees' lunches.

Stress Care in Handling

Every precaution was exercised to avoid damage to the stainless steel during both fabrication and installation. Recommended practices were followed to the letter in handling the materials to be sure that all equipment fabricated at the shop was installed in the same condition as when it left the shop.

Precautions against scratches, dents and other marks on the polished surfaces involved checking dies at the brakes, shears and other mechanical tools for forming joints, bends, etc. Adhesive tape was used successfully on dies where the bends were not severe. This type of protection prevents direct contact between the polished sheet surface and the hardened steel dies. Waxed paper, oiled paper and cellophane, which serve as "lubricants" between dies and sheet, have also been used extensively and very successfully to eliminate die scratches. Commercial spray coatings, brush-applied latex base or plastic base compounds are also very helpful. These products have also proven successful in preventing marking of the finished surface. All products were wrapped in shipping paper before being transported from the fabricating plant to the point of erection.

Weld Areas Neutralized

All acids were removed from soldered or welded areas by washing the entire component with a 5 to 10 percent concentration of baking soda solution and a soft rag. Small parts were completely immersed in the solution if possible. (This neutralizing action should never be overlooked and should be performed immediately after the joint has been made.)

To protect the metal from plaster, cement, concrete, ashes, rust from adjacent steel work, as well as deposits which may accumulate on the installed stainless steel parts from work done by other crafts, the stainless steel is coated with commercially available plastics or covered with adhesive paper, which will protect the

sheets for a long time—up to a year, if necessary.

When the building was completed, Crown Iron Works showed the maintenance staff the procedures involved in taking care of the stainless steel work. This includes periodic cleaning, its frequency depending on the amount of service and other conditions. Where weekly cleanings are indicated, ordinary soap and water is used for hand rails, door frames, etc. that are often touched by office personnel. When soap and water is used, thorough rinsing and drying is necessary to avoid streaking. The building maintenance staff was warned never to use steel wool or steel brushes on stainless steel unless absolutely necessary; in which case, wool or brushes must be stainless steel. They were also advised to clean fabricated products with a number of corners and crevices - such as the kitchen and cafeteria fixtures after each use.

The editors acknowledge the cooperation of T. I. Adams, Republic Steel Corp., in obtaining the illustrations and information used in this article.



NO STRANGER to American Artisan readers and the heating-cooling field, Guy Voorhees is one of the industry's outstanding authorities. For many years, he has been associated with NWAHACA, assisting in the preparation and presentation of educational programs, technical manuals and government and industry reports. Mr. Voorhees long has been in a position to keep abreast of latest developments, and his reports in this continuing series in American Artisan reflect these upto-the-minute ideas.

Practical Perimeter Heating Jobs Call for Correct Diffuser Placement

Whether or not branch ducts and diffusers can be installed to blanket all cold exposed surfaces, they must be properly located and sized to handle their specific assignments

Last Month's "Classroom" article emphasized that in a room with two exposed walls and one or more window or door openings in each wall, one or more diffusers must be located along each exposed wall to provide complete perimeter heat distribution. This is one of the features a dealer-contractor ordinarily should provide when he tells a customer he's installing a true perimeter system in his home.

Sometimes, however, especially in a modernization job such as we are considering in this series, we find a room in which blanketing each exposed wall with a rising current of heated air from a diffuser is quite impractical. This condition is found in the kitchen (room 3) of our problem house (Fig. 1). Personal discussions with heating dealer-contractors in many parts of the country indicate that most of them would compromise by specifying

for this room a single floor, baseboard or low wall diffuser on the side where space is available. The reason most commonly given is that a kitchen such as this is much less critical, from the comfort standpoint, than is a living room where occupants are seated at rest. In the kitchen, the housewife is more or less active and much less conscious of air temperature than when she is sitting quietly in the living room reading, talking or watching television.

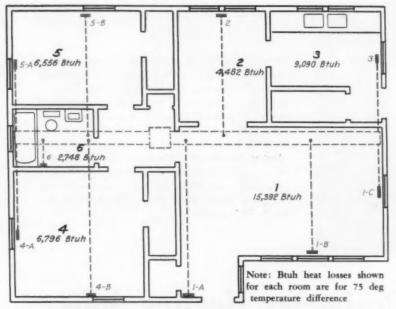
Duct Has Side Takeoff, Two Elbows

Assume the branch duct supplying the kitchen diffuser in Fig. 1 has a side takeoff from the extended plenum, two 45 deg angles to carry the duct up into the joist space and an end boot at the diffuser. The duct itself is between 5 and 10 ft long. Since an end boot, according to the capacity tables in NWAHACA Manual 4, is counted as an elbow and since the two angles are equivalent to one elbow, we have a 10 ft branch duct with a) side takeoff, b) floor diffuser, c) two elbows.

Table 1 shows the capacity of such a branch is 10,740 Btuh. The calculated heat loss of this room (see March, 1958 American Artisan, page 109) is 9090 Btuh so this branch has ample capacity.

The Btuh values in Table 1 include those published in NWAHACA Manual 4, as well as the higher Btuh values* which were purposely omitted from the manual table to

^{*}The higher values in Table 1 are based on an extensive series of tests at the University of Minnesota under the personal supersition of Prof. A. B. Algren, head of the division of beating and air conditioning.



1 PERIMETER SYSTEM BRANCHES in problem house have side takeoffs to diffusers 1-C, 3, 4-A and 5-A from extended plenum with two 45 deg angles to carry branch duct up into joist space. All other branches have top takeoffs from extended plenum. Note that blanketing all exposed walls in kitchen (room 3) would be impractical, and that exposed walls of living room (room 1) could be expected to have variable heat losses to be made up by branches

TABLE 1—CAPACITIES OF 6 IN. BRANCHES from extended plenum trunk duct (for side wall and floor diffusers only) supplement published data which does not show the greater Btuh and cfm capacities of the shorter 6 in. branches.

TOD	TAKEOFF	-	avtandad	nlanum
IUP	IAREUTT	Trom	extended	pienum

B.T.	of of		Α	ctual L	ength fr	om Ext	ended	Plenum	to D	iffuser	(ft)		
	ows	5	10	15	20	25	30	35	40	45	50	55	60
0	Btuh	11450	10600	9860	9060	8430	7800	7210	6660	6170	5700	5270	4910
	Cfm	123	120	117	114	111	109	106	104	102	100	98	97
1	Btuh	10610	9850	9130	8450	7840	7250	6700	6210	5730	5300	4900	4560
	Cfm	115	112	110	107	105	103	101	99	97	95	93	92
2	Btuh	9920	9200	8530	7900	7320	6800	6280	5790	5350	4960	4590	4250
	Cfm	108	105	103	101	99	97	95	94	92	91	89	88
3	Btuh	9330	8660	8020	7430	6900	6370	5900	5450	5030	4650	4300	3990
	Cfm	102	100	98	96	94	92	91	89	88	87	85	84
4	Btuh	8810	8180	7580	7010	6500	6000	5550	5150	4750	4700	4070	3780
	Cfm	96	94	93	91	90	88	87	86	84	83	82	81
5	Btuh	8390	7770	7200	6650	6160	5700	5280	4890	4500	4170	3840	3580
	Cfm	91	90	89	87	86	85	83	82	81	80	79	78
6	Btuh Cfm	7980 88	7380 86	6840 85	6340 84	5880 83	5430 81	5020 80	4650 79	4290 78	3970 77	3660 76	3400

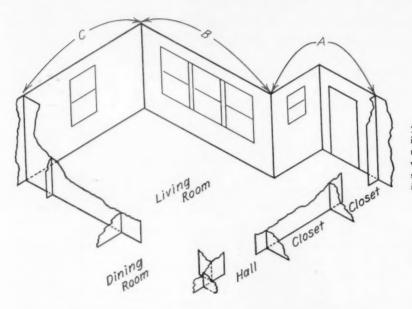
SIDE TAKEOFF from extended plenum

0	Btuh Cfm			11940 140	11000 135	10120 131	9330 127	8600 123	7930 120	7310 117	6740 114	6230 111	5800 109
1	Btuh Cfm		11690 132	10810 128	9970 124	9250 121	8560 117	4900 115	7290 112	6720 109	6200 107	5740 105	5340 103
2	Btuh Cfm	11600 125	10740 122	9930 118	9180 115	8510 113	7890 110	7300 108	6740 105	6230 103	5750 101	5310 99	4960
3	Btuh Cfm	10710 116	9940 113	9210 111	8540 108	7900 106	7300 104	6780 102	6270 100	5800 98	5360 96	4960 94	4616
4	Btuh Cfm	10000 109	9270 106	8580 104	7970 102	7370 100	6820 98	6330 96	5850 95	5410 93	5000 91	4620 90	4300
5	Btuh Cfm	9410 102	8720 100	8080 98	7490 97	6940 95	6440 93	5960 91	5490 90	5080 89	4690 87	4320 85	4020
6	Btuh Cfm	8900 97	8240 95	7630 93	7060 92	6550 90	6070 89	5600 87	5190 86	4800 85	4430 84	4100 83	381

help insure better perimeter system design by discouraging the use of only one diffuser in a room having a relatively high heat loss. (A number of very competent heating men have expressed the opinion that no values higher than 7000 Btuh should be shown in the manual's capacity tables.) But we must face the fact that, in actual heating system design, we occasionally find rooms, such as the kitchen of our problem house, in which a diffuser cannot be installed at each exposed wall and the only practical alternative is to "oversize" a single supply duct to the room. In this case, the designer of the system should check with the manufacturer of the diffuser which is to be used to see if it will properly handle the air volume (cfm) shown in the table.

Since the dining room (room 2) presents no problem of diffuser location, let's consider the living room (room 1) which has a calculated heat loss (March, 1958 American Artisan, page 109) of approximately 15,390 Btuh. When a room is to have more than one diffuser it has been commonly assumed that the approximate quantity of heat to be supplied by each is equal to the total heat loss of the room divided by the number of diffusers. On that basis, if three diffusers are to be placed in the living room, each should deliver about 5100 Btuh.

But there's another method of finding the preferred capacities of each of the warm air supply ducts in any room which has two or more supply outlets. This method was first applied to duct system design in non-residential heating, especially in stores, factories and similar applications where there were substantial differences in the heat losses of various parts of a large room. The results proved so satisfactory that some engineers regularly apply the same method to those rooms in a residence where rates of heat loss are quite different in various parts of the room. It is especially helpful in locating and sizing diffusers and ducts in modern houses with irregularly shaped rooms and large variations in types and areas of glass surfaces in the several exposed walls.



2 EXPOSED WALLS of living room in problem house are broken down into three sections to account for variables which must be considered in specifying sizes of individual branches and diffusers in perimeter system

For a residence with a perimeter heating system (which implies a warmed floor) the only heat losses are by a) transmission through the ceiling, b) transmission through net exposed wall, c) transmission through window and outside door areas and d) infiltration through crack around the windows and doors. In applying this design method to a residence, the ceiling loss is customarily ignored. The first step is to divide the exposed wall into sections. In this problem the wall sections A, B and C are shown in Fig. 2. Transmission and infiltration losses are figured separately for each section, full infiltration usually being figured for each window and outside door. For our problem room these losses are as follows:

Section	Α	В	С	Total, all
Net exposed wall trans- mission, Btuh	1224	1278	1620	4122
Window and door trans- mission, Btuh	1276	1804	616	3696
Window and door infil- tration, Btuh	3658	2538	846	7042
Totals, Btuh	6158	5620	3082	14860
Percent of total wall, win- dow and door transmission and infiltration	41	38	21	100

The total heat loss of the sections is 14,860 Btuh, 41 percent of which is the loss of section A, 38 percent for section B and 21 percent for section C. The above total is not the same as the calculated heat loss of the room (15,392 Btuh) as given on page 109 of the March American Artisan, for two reasons which apply to all rooms in which this section-by-section method is used for duct sizing: 1) the section-by-section method does not include ceiling heat loss; 2) it assumes that maximum infiltration occurs at each window and outside door whereas the heat loss of the room as a whole takes into account only the window and door crack through which the greatest infiltration will occur with any specific wind direction. It so

happens that, for the particular room we're considering, the difference between the accurately calculated heat loss of the room as given in the March American Artisan and the section-by-section total is only about 10 percent; for rooms in some houses the difference may be very much greater. Regardless of the difference, however, the percent distribution of the heat losses through walls, windows and doors may be used effectively as a basis for planning the distribution of warm air to the room.

Diffuser Makes Up Heat Loss from Its Section

Since section A of our problem room has a total loss through walls, window and door which is 41 percent of the total of all three sections, its diffuser (1-A) should deliver approximately 41 percent (6311 Btuh) of the 15,392 Btuh heat loss of the room. Diffuser 1-B should deliver about 38 percent (5849 Btuh) of the total and diffuser 1-C should deliver about 21 percent or 3232 Btuh. These values are tabulated in line 2 of columns 1, 2 and 3 of Table 2.

Round Off Figures

Manual 4 capacity tables list the lengths of the branch ducts in increments of 5 ft, so the lengths in line 4 of the accompanying table are listed in the same way; lengths ranging from 11 to 15 ft are listed as 15 ft and lengths of 6 to 10 ft are called 10 ft. Since runs 1-A and 1-B have top takeoffs from the extended plenum trunk, line 5 of the table shows no elbows in these runs. Branch 1-C has a side takeoff from the trunk with two 45 deg angles to carry the branch duct up into the joist space. Then, because it has an end-type boot at the diffuser which counts as an extra elbow according to Manual 4, line 5 of the table shows two elbows for this branch. The minimum size

of round branch duct and its Btuh capacity are given for each branch in lines 6 and 7.

Common Sense Determines Size of Branch

Lines 8 and 9 show that a 5 in. branch for diffuser 1-A has a rated capacity 511 Btuh less than the 6311 Btuh requirement shown in line 2. But if we were to substitute the next size larger branch (6 in.), its rated capacity of 9856 Btuh (Table 1) would exceed the requirement by 3549 Btuh, which is 56 percent greater than this diffuser needs to supply. The 5 in. branch with its shortage of 511 Btuh is only 8 percent less than the theoretical requirement and common sense tells us that if we are to size the ducts as accurately as possible, it would be more reasonable to install a 5 in. branch with its 8 percent shortage.

For diffuser 1-B, lines 8 and 9 of Table 2 show that a 5 in. branch duct has a rated capacity only 49 Btuh less than desired—a shortage of less than 1 percent. Column 3 of the table shows (lines 8 and 9) that a 4 in. branch to diffuser 1-C has a rated capacity of 1168 or 36 percent greater than the desired 3232 Btuh delivery.

Damper Adjustment Balances Deliveries

Line 7, col. 4 shows that the combined capacity of the three branches listed in line 6 is 16,000 Btuh. Comparing this with the calculated heat loss of 15,392, we see that these three branches have a total rated capacity of 608 Btuh (4 percent) more than the calculated requirement of the room. Whenever deliveries from diffusers are not quite

TABLE 2—TABULATION OF DATA from heat loss estimates and branch duct capacity calculations provides comparisons needed for accurate specifications

		-	64	3	4
		Col.	Col.	Col.	Col.
1	Diffuser no.	1-A	1-B	1-C	Total
2	Required Btuh	6311	5849	3232	15392
3	Type of takeoff	top	top	side	_
4	Length of branch, ft	15	15	10	_
5	No. of elbows	0	0	2	_
6	Size of round branch, in.	5*	5*	4**	_
7	Btuh capacity	5800*	5800°	4400**	16000
8	Over or short	short	short	over	over
9	Amount over or short, Btuh	511	49	1168	608
10	Percent over or short	8	1	36	4

satisfactory we expect, of course, to balance the job by damper adjustment.

If the minimum size round branch is selected for each first story diffuser from capacity tables in NWAHACA Manual 4, the accompanying table and one in the June American Artisan, it will be found that 4 in. branch ducts are adequate for runs 1-C, 4-A, 4-B, 5-A, 5-B and 6. Five in. branch ducts will meet the requirements for runs 1-A, 1-B and 2. A 6 in. branch is required for run 3.

When Is Heating System 'Ready for Cooling'?

A SUGGESTED policy as to what characteristics of a warm air heating system should be considered essential in order to identify that system as "ready for the addition of cooling" has been issued by the National Warm Air Heating and Air Conditioning Association and submitted to FHA for adoption as a standard for loan guarantees. Following is a condensation of the proposal.

Structure and Air Distribution
System — Room-by-room heat gain,
and supply and return air distribution system design and installation
for heating and cooling shall be
in accord with appropriate
NWAHACA manuals, the ASHAE
Guide or ARI standards. Ducts located outside the conditioned space
shall be suitably insulated, vaporproof or enclosed within sealed vapor
barrier as specified in FHA bulletin
ME-13-A.

Utility Services—Electrical service will normally be 115-230-v, single phase and sufficient in capacity to include cooling, Condensate drain shall be located at the probable location of the unit.

Accessories-Equipment and When contemplated equipment has winter and summer heat exchangers located in series, a) furnace shall be certified suitable for use with pressures and volumes for year 'round operation when cooling coil is installed; b) blower shall be capable of developing sufficient total pressure and volume; c) provision shall be made for later installation of properly sized evaporator. When heat exchangers are in parallel, a) sufficient space shall be available for later installation of summer air conditioning unit and bypass dampers; b) return and supply duct system must be adaptable to installation of cooling unit without extensive alteration. When heat exchangers are in series during cooling and evaporator is out of air stream during heating, a) space must be available for cooling unit, connecting ducts and dampers; b) supply duct system shall be installed so summer air conditioning unit can be attached without extensive alterations of existing ducts. The initial heating installation may incorporate only a heating thermostat, but installing either a heating-cooling thermostat or a thermostat readily convertible to year 'round operation is desirable. Control wiring incorporating a minimum of five conductors shall connect the furnace and the thermostat.

The policy was prepared at the request of FHA by a special committee of the association with FHA representation and approved by the NWAHACA board of trustees. Copies of the proposal in full were distributed by the association.

the quality tells ... the quality sells

JANITROL

ADD-ON COOLING SYSTEM



adapts most any warm air furnace for powerful, efficient summer cooling ... features exclusive PRIDE O' YARD air-cooled compressor-condenser unit



add to your profits... add to your prestige... with

JANITROL

quality engineered and built to help you sell and grow!



Exclusive JANITROL Evaporator

Coll design allows installation in either horizontal or vertical position. Features fast drain-off of condensate to minimize re-evaporation into circulating air during compressor "off" cycle. No floor space needed, no noise or vibration because there are no moving parts inside the house!

If you're looking for big, new profit opportunities without installation and service headaches, Janitrol ADD-ON waterless cooling is made to order for you.

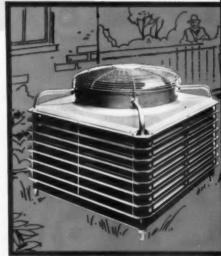
With the complete Janitrol ADD-ON Cooling line, you can adapt most any forced air furnace for really efficient central cooling . . . cash in on the booming market for summer comfort.

ADD-ON COOLING components are system-engineered for easy installation with quiet, powerful performance that makes one job sell another. Evaporator coil fits in supply outlet duct in either upflow or downflow systems. The beautiful Janitrol PRIDE O' YARD Compressor-condenser unit—styled by a leading designer—is specially engineered for cooling with outside temperatures to 125° F. And waterless operation eliminates plumbing, sewage and water supply problems—lets you install cooling for less, and appeal to more prospects.

Janitrol evaporator coil and PRIDE O' YARD units are available in sizes to handle the heat gain on most any residential cooling job. Get the good word on Janitrol waterless ADD-ON Cooling from your Janitrol representative, or mail the coupon to us right away. Sell and grow with Janitrol!

Exclusive JANITROL PRIDE O' YARD Compressor-condenser Unit

adds distinctive beauty to any yard—completely outmodes all other units of its type. Exclusive louvered design allows air circulation from all sides while shading condenser from sun at all times . . boosts cooling efficiency and results in lower current drain. Air exhausts out top, instead of sides . . . no damage to nearby growing things from exhaust air. Rugged, weatherproof construction with every necessary safeguard for children and pets. Compressor-motor is hermetically sealed for years of trouble-free performance—warranted in writing for five years!



CAPACITIES

*Not illustrated—for larger residential and light commercial applications.



To adapt a low-boy furnace for summer cooling, the cooling coil section is installed in supply air duct.



with big savings by using existing ducts!

When warm air ducts are placed in crawl space, the cooling coil supplies efficient cooling.



In adapting a highboy furnace (upflow) for summer cooling, the cooling coil section can be mounted in the supply air duct as shown.

STATE



Here, the cooling coil adapts a horizontal furnace in the garage for summer cooling.



If space permits, the cooling coil can be used with a high-boy furnace, as shown here



In this installation, a horizontal - furnace and the cooling coil in the attic are the key to summer cool-



For a Janitrol downflow furnace, used with perimeter heating, simply raise the furnace and install the cooling coil beneath it.



An auxiliary blower is available for installation where existing blower capacity is inadequate. Here is a cooling coil plus auxiliary blower in attic.

JANITROL HEATING AND AIR CONDITIONING DIVISION Surface Combustion Corporation, Columbus 16, Ohio

Install Janitrol Add-on cooling in homes with or

without a basement . . . provide full central cooling

In Canada: Moffats Ltd., Toronto 15

Please show me how I can sell and grow with new Janitrol ADD-ON COOLING and other quality-built Janitrol products for home comfort.

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Ask your Janitrol representative for all the facts, or RUSH the coupon to us today!

Sell and Grow with ANITED

From JANITROL—a complete line of gas and oil furnaces, unit heaters, conversion burners, air-cooled summer cooling conditioners, combination heating-cooling conditioners.

Fill in and MAIL TODAY. No obligation.



Parts 'Flow' from Sheet to Site in Planned Shop

INCREASING EMPHASIS on safety and efficiency in sheet metal shops has directed considerable attention to working space and interrelation of equipment functions.

The diagram on this page is a floor plan of the new shop of the Combustioneer Corp., Arlington, Va. The equipment was laid out to maintain a free flow of work from each piece of equipment through each stage of the fabrication of duct work for air conditioning systems.

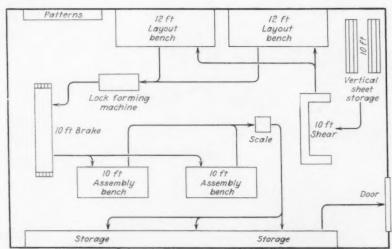
At the lower right in the diagram is the 10 ft doorway through which raw materials are brought into the shop and finished duct work is loaded on trucks bound for the job site. The sheets are stored in vertical racks (upper right).

When a shop order for duct work is received, sheets are taken from the rack, cut to size at the shear and moved to one of the two 12 ft layout benches along the wall (top of diagram). Patterns for various fittings are stored near the layout bench (upper left).

After the layout fitting has been completed, the sheet is run through the lock forming machine to the left of the layout benches. From the lock forming machine, the piece is moved to the 10 ft brake.

Pieces Go to Assembly Benches

After the sections have been shaped at the brake, the pieces are moved to one of the 10 ft assembly benches where they are knocked to-



SMOOTH FLOW OF WORK through each phase of duct fabrication is result of carefully planned layout of equipment in new shop

gether. From the assembly benches, the various duct sections are weighed at the scale and placed in the storage area (bottom of diagram).

As parts are needed for the job, they are removed from the storage area and loaded on trucks through the nearby doorway.

As the parts for the duct sections

are processed from one stage to the next, they are placed on tables with large casters and moved easily from one work station to the next.

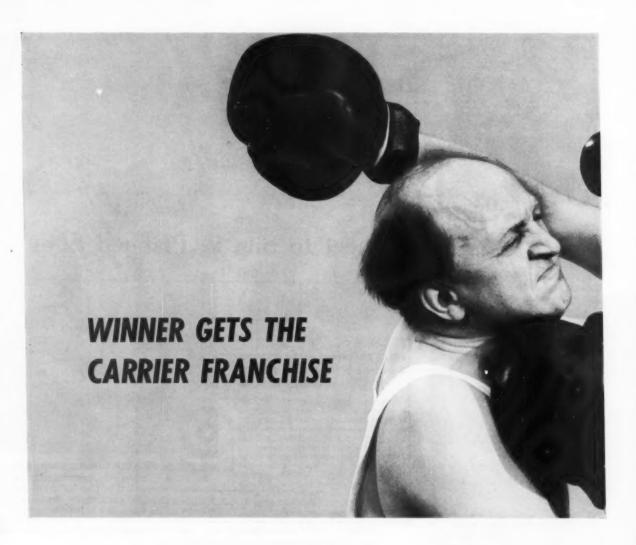
Confusion Is Minimized

Such a layout permits orderly handling of various sized orders. Several crews can work in the shop without getting in each other's way. Enough benches and tables are provided to enable workers to perform individual operations without interfering with the work being done by others. An adequate supply of benches and tables also allows a skeleton crew to work at various operations, performing one portion of the work and then moving on to the next operation.

Tell Others About Your

Successful Ideas

by writing to: Editor, American Artisan, 6 N. Michigan Ave., Chicago 2, Illinois.

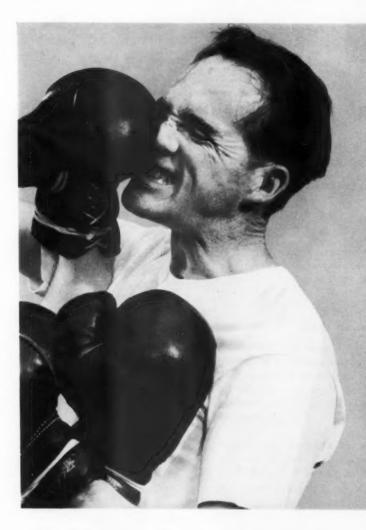


A multi-million-dollar research program brings an unending parade of exciting new products to the Carrier dealer



THIS MONTH CARRIER

INTRODUCES A NEW HEAT PUMP
THE 2.5-TON HEAT PUMP WEATHERMAKER



Why the Carrier franchise is the most valued in the industry

- 1. A Carrier dealer gets engineering help from his distributor on difficult jobs.
- A Carrier dealer receives continuous training in the most modern techniques for engineering, selling, installing and servicing.
- A Carrier dealer can obtain expert management consultation on any phase of his business operation.
- 4. A Carrier dealer doesn't have to tie up his own capital in inventory.
- 5. A Carrier dealer is protected against price reductions on unsold inventory at all times.
- 6. A Carrier dealer enjoys the most liberal product warranties in the business.
- 7. A Carrier dealer gets sales support from the Carrier National Buyer Organization. This team sells national firms who require air conditioning installations in the dealer's town, turns the order over to the dealer.
- 8. A Carrier dealer is backed with hard-selling advertising support. Heavy national magazine and key-market newspaper advertising sell the Carrier dealer as the man who knows air conditioning best. Liberal co-op policy, sales promotion material, let him tie in effectively at the local level.
- A Carrier dealer enjoys unequaled prestige
 his products are well-known and respected.

 The Carrier dealer is Mr. Air Conditioning wherever he's located.
- 10. The largest selection of air conditioning equipment on the market. If it can be air conditioned, Carrier dealers have what it takes!

WHAT'S IT LIKE?

The new 2.5-ton Carrier Heat Pump Weather-maker is a compact two-section unit similar in design to the highly successful 4.7-ton model. It delivers heating and cooling using only air and electricity as fuel. No water is necessary. Its indoor fan-coil and heater section may be tucked in a closet, attic or basement. The refrigeration section may be placed outdoors in the yard, garage or on a rooftop. A thermostatic control is available with automatic change-over from winter heating to summer cooling.

WHY IS IT BETTER?

Lower first cost thanks to "Climate Balance."
This exclusive Carrier feature eliminates the expense of more cooling and heating capacity than is needed. Lower installation costs than other heat pumps because of two-section construction that eliminates need for bulky duct-

work to bring in outside air. Lower operating costs. Two years of extensive testing have proved that in most cases year-round operating costs of the Carrier Heat Pump Weathermaker are substantially lower than air conditioners using conventional fuels.

HOW IS IT A GOOD THING FOR THE CARRIER DEALER?

More prosperity! The new 2.5-ton Carrier Heat Pump Weathermaker has a tremendous market potential. First, there are the 520,000 new homes in the 1000-1400 sq. ft. class expected to be built in 1958. Add the thousands of small shops and offices as well as older homes. Taken together they mean booming new business for the Carrier dealer. And the new 2.5-ton Carrier Heat Pump Weathermaker, the last word in year-round comfort, further establishes the Carrier dealer as the man with the best air conditioning equipment.



Interested in becoming a Carrier dealer?

Talk it over with your Carrier distributor. You'll find his name in the Yellow Pages. Carrier Corporation, Syracuse, New York.

Beware of Fixed-Term Oral Employment Contracts

If the term of performance is for more than a year, it probably won't be enforceable in court, should the employee violate it at any time

AN OLD STATUTE adopted in England nearly 300 years ago and now a law in every state can have an important effect on dealer-contractors and wholesalers who prefer to enter into employment contracts with their sales and supervisory personnel and other employees. Under this law, no court will grant a recovery on any oral employment contract which is not to be performed within a year from the date of the agreement.

The old law provides, "No action shall be brought upon any agreement that is not to be performed within one year from the making thereof, unless the agreement upon which such action shall be brought, or some memorandum or note thereof, shall be in writing and signed by the party to be charged therewith."

When a workman is hired for more than a year from the date of the contract, neither he nor his employer can look to the courts for an award of damages or any other relief if the employee quits or is discharged within the year.

Final Discussion Postponed

Terms of employment were discussed by a dealer-contractor and a prospective employee on March 30th. Both agreed on that day that the employee should have the job and would begin work on April 14 when they would decide on the salary.

When the employee reported for work on the agreed day he was assured that he was hired for one year and a satisfactory salary arrangement was made. A few months later the employee was discharged. He sued his employer for what he claimed was a breach of the employment contract.

Is Contract Void?

The old English statute was interposed by the employer in his defense that the employment contract, actually made on March 30th but not to be performed in full until a year from April 14th, was void and unenforceable. The court said:

"It is well settled that in order that there be a valid and enforceable contract there must be a meeting of the minds of the contracting parties upon all the essential terms and conditions of the contract. If the contract is indefinite and incomplete in respect to any material term or condition or still open to negotiation, as for instance, to salary or compensation, then there is no valid and enforceable contract.

Contract 'Completed' Later

"It is clear, therefore, that the contract of employment here involved was not made and completed until April 14 when the employee reported for work and the question of salary was finally agreed upon.

"An oral contract of employment to commence on a future date is within the statute of frauds and unenforceable. Here the contract was not made on March 30th and restated and confirmed on April 14th. On the contrary, preliminary negotiations were started on March 30th and the contract was not made and completed until April 14th."

Another application of this old statute to employment contracts illustrates the scrupulous attention bestowed by the courts on this provision that a valid oral employment contract must be performed within the year following its making. In the second case, while it was admitted that the agreement extended beyond this period the employee maintained that the statute did not apply, since it was agreed that he "could quit at any time."

The court found the agreement unenforceable, irrespective of the provision which would terminate the employment contract within the year.

Statute of Frauds Applies

"Our statute of frauds and its prototypes have been on the books for almost three centuries," said the court. "but controversies still rage as to its meaning and efficacy. It was intended to guard against the perils of perjury and error in the spoken word, and to protect parties against unfounded and fraudulent claims. The policy of this statutory provision was to prevent leaving to memory the terms of a contract for longer time than a year. However, this policy has not always been applied sympathetically. Where the oral agreement does bear a fixed term and is not to be performed within a year it is held to be within the statute and unenforceable even though the obligations thereunder may be terminable by operation of law well within the year."

The court emphasized that fixedterm employment contracts should be in writing and signed by both employer and employee.

[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]

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BETT-MARR

BAND SAW

100 TO 3000 FPM BLADE SPEEDS....

Outperforms
Band Saws
Costing
Three Times
As Much...

Here's a band saw that's compact yet has a full a inch throat—that a low cost yet does a the cutting jobs necessary in the sheet metal shop—that needs no special wiring or installation yet is a heavy-duty, production type saw. It's the saw ou need in your shop because it will any for itself quickly out of the wings it makes.

DESIGNED EXPRESSLY FOR THE SHEET METAL

Here's why contractors report one man with a Lockformer Bett-Marr can turn out more work than six-men with snips.

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For Heavy Duty Production Cutting

MATERIAL	BLADE	CUTTING SPEED
Forgings, heavy bar and rod stock, etc.	100 fpm	Approximately 6 inches per minute (¼" plate), depending on thickness and hardness of metal
Stacked sheet metal— bronze, brass, copper, aluminum, and steel	600 fpm.	Up to 15 inches per min- ute with stacks of 50 to 70 sheets
Stainless steel, cold or hot rolled plate	3000 fpm.	Friction cutting stainless up to 4½ feet per minute on stock up to 12 gauge

Bigger Threat:	Model 24-5 has full 24" throat, uses three 14" wheels instead of two 24" or 26" wheels. Frame size is only slightly larger than a 14" throat saw.
Speed Centrel:	Simple V-Belt drive with conventional sheaves elimi- nates speed reducers, makes the most of available power.
Final Drive:	Positive, friction-free chain replaces multiple belts. No chatter, no slippage.
Blade Control:	Cemented rigid carbide blade guides replace conven- tional wheels. Alignment is excellent, blade can't twist even on very small radius cuts.
Special Flanged Wheels:	Blades can be changed quickly and easily. Flanges prevent blade from slipping off during operation.
Lifetime Lubrication:	Ball-bearings used throughout with Neoprene seals to protect built-in lubrication.
Rugged Frame:	Heavy duty castings provide the strength and rigidity to provide blade tension necessary for constant production sawing.

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THE **IOCKFORMER** COMPANY . 4615 WEST ROOSEVELT ROAD . CHICAGO 50, ILLINOIS

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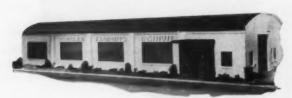








STEWART-WARNER FACTORY TRAINING ASSURES SUCCESSFUL SELLING



The Stewart-Warner Training Institute.

Stewart-Warner's unvarying objective is that dealers holding the Stewart-Warner Exclusive Franchise must make money! That is the reason for the Stewart-Warner Training Institute... conceived and developed to give

dealers and their personnel thorough instruction in every phase of successful selling, installing and servicing.

The Training Institute is housed in a building especially designed for the purpose...furnished with cutaway models, working demonstrators, charts and equipment for illustrated lectures. Courses include sales procedures and business promotion methods proved most effective—including how to demonstrate a product and close a sale. This school saves dealers' time in training men...does a complete job with all the proper tools. Hundreds of Stewart-Warner dealers have attended the Institute—declare it amazingly successful in stepping-up sales.

Write today for complete information on the Stewart-Warner Exclusive Franchise and how it can revolutionize your profit picture.





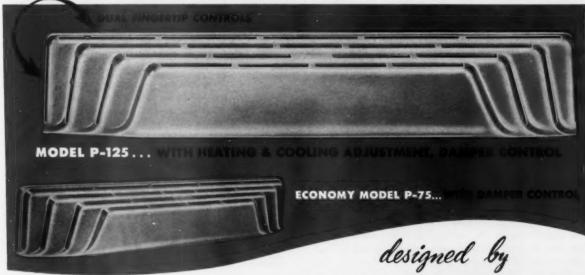
HEATING AND AIR CONDITIONING STEWART-WARNER CORPORATION

Dept. A-78, Lebanon, Indiana



...today's first adjustable-for-heating adjustable-for-cooling

PERIMETER DIFFUSERS



Today's MOST ADVANCED DIFFUSERS . . . AT A TRULY COM-PETITIVE PRICE. Obsolete ALL others in APPEARANCE . . . DE-SIGN . . . PERFORMANCE!

Because they are FULLY ADJUSTABLE . . . the new Titus MODEL P-125 diffusers are today's only baseboard diffusers that can provide the proper throw and spread for obtaining maximum performance from BOTH HEATING AND COOLING SYSTEMS.

Years ahead in looks, tool New distinctive swept-line styling blends beautifully with any surroundings.

New ECONOMY MODEL P-75 has same, superb styling and basic ADVANCED design as Model P-125 except does not have dual adjustment feature. CAN GIVE YOU THE CONTRACT AGAINST ALL KINDS OF PRICE CUT BIDDING BECAUSE THEY ARE BETTER LOOKING, ARE CONSTRUCTED BETTER, ABSOLUTELY OUTPERFORM COMPETITION.

Both of these new Titus models have a large 32 sq. in. of free area. Both are quicker, easier to Install. Provide lasting satisfaction — GIVE THAT EXTRA IN HEATING & COOLING COMPORT THAT MAKES AND KEEPS CUSTOMESS HAPPY.

PROOF!

Isovels from laboratory tests prove Titus new adjustable perimeter diffusers FAR SU-FERIOR in PERFORMANCE! Dotted red line shows how cool air is forced to ceiling when Model P-125 diffuser is set for COOLING. Solid red line shows that when diffuser is set for HEATING warm air is set for HEATING warm air is diffused in broad pattern so it covers entire window or wall area.

TITUS

WRITE FOR FREE CATALOG TITUS MFG. CORP., WATERLOO, IOWA Rush new free illustrated Titus Perimeter Diffuser Catalog Send name of jobber nearest me NAME COMPANY ADDRESS CITY STATE

WHAT THE ASSOCIATIONS ARE DOING

Hold First Heating-Insulation Conference

"SELL BUILDERS AND HOME OWNERS the whole 'comfort package' - both insulation and year 'round air conditioning - and you'll multiply sales and profits. Deliver greater over-all comfort at lower installation and operating costs and you'll multiply customer satisfaction and customer volume." This point was brought out by John Hewitt, president, Todd-Roberts Co., Inc., Wichita, Kans., at the recent Greater Comfort Conference sponsored by the National Mineral Wool Association in cooperation with the National Warm Air Heating and Air Conditioning Association. The conference, held in Pittsburgh on May 13, was the first in a series of meetings which will be held in key cities throughout the country. Other speakers were Randall Nelson, public relations director of NWAHACA, and James P. Verhalen, a member of the board of directors of the National Mineral Wool Association. Presiding at the conference was William Boehmer, president of the Pittsburgh Heating and Air Conditioning Contractors' Association.

'Minimum' Insulation Is Expensive

Mr. Hewitt cited the case of a builder who wanted minimum insulation — "an inch and a half in the walls and four inches in the ceiling." It was pointed out to him that if more insulation were used it would be possible to reduce the size of both the air conditioner and the furnace. "By increasing the sidewall insulation to three inches and the ceiling insulation to six inches," Mr. Hewitt said, "and shading a few west exposed windows, at an increased cost to the builder of \$100, we were able to reduce the air conditioner from a 4 hp unit to a 3 hp model. Reducing the size of the air conditioner enabled us to reduce the size of the furnace because we did not have to have such a big fan capacity.

"We figured a gross saving in equipment of \$300, and subtracting the \$100 for extra insulation, a net to the builder of \$200. In addition, the family that moves into the house will save money on operating costs as long as they live there."

Builder, Home Owner Can Both Save

Mr. Verhalen pointed out that closer cooperation between heating and air conditioning dealer-contractors and insulation contractors would result in more sales for both groups. The first step, he said, "is to show both the builder and the home owner how to save money."

Supporting Mr. Hewitt's remarks on the savings in equipment and operating costs made possible by proper insulation, he presented the results of a study made by John Watt, University of Texas, at the Air Conditioned Village. "Mr. Watt analyzed eight houses," he said, "each of which used a maximum of mineral wool insulation. He found that the builders were able to use smaller air conditioning units, which resulted in an average saving of \$139.60 a house. Further, the people who lived in those houses saved an average of \$107.90 per year by using less gas, electricity and water."

Sell Comfort for More Sales, Better Profit

Randall Nelson said that providing more comfort for the American consumer public would result in better sales and more profits for both warm air heating dealercontractors and insulation contractors. He emphasized the importance of educating the public to understand that while a first class heating system costs more, the additional comfort it provides is easily worth the extra cost. He warned against the fallacy of "stripped down" installations to meet price competition, saying that such installations all too often leave the home owner with the wrong impression regarding the ability of a warm air system to provide comfort.

Commenting on rising prices over the past 20 years, Mr. Nelson pointed out that price increases in the warm air industry have lagged far behind those of most other industries. He asked: "In view of rising costs of labor, materials, taxes and overhead, how do your prices compare with what they were in '38 and '48? Do your current profits reflect the skill and technical advances made during the past 20 years? Are your service and salesmanship strong enough in the public's mind to provide you with the profit you deserve? If you've weighed these questions and found the answers to be satisfactory, then you are an exception among dealer-contractors operating in today's economic environment."

Home Building To Grow Rapidly in '60s

With regard to future prospects, he said that statistics indicate that the mid-60's will see another period of accelerated house building activity and a corresponding rise in the number of warm air installations. He pointed out, however, that if prices and profits in the warm air industry did not rise appreciably during the last 20 years "when the greatest expansion ever known in the house building industry took place," the position of the warm air industry in the next housing boom will be none too enviable "unless we take stock of our past mistakes, and take measures to correct them now."

(More association news on page 80)



with the special training of

In this racing, competitive economy of ours, the man with the broadest knowledge of his field is the one who leads. In heating and cooling he's the Airtemp dealer. Airtemp dealers and their personnel receive special training at Chrysler Corporation Training Centers. This complete, intensive instruction covers every aspect of the industry—ranges from product features and installation to selling, advertising and merchandising. On this sound foundation, Airtemp dealers build profitable sales volume.

There are other reasons, too, why Airtemp dealers make more money—

- The Airtemp line is complete—really complete—with 297 heating and cooling models. They can satisfy any heating or cooling need.
- They sell the Chrysler name and Chrysler's famous engineering.
- Pre-tested merchandising helps and incentive programs.
- · Factory advertising in your local markets.

CHRYSLER



AIRTEMP DIVISION, CHRYSLER CORP. DEPT. AA-7-58, DAYTON 1, OHIO

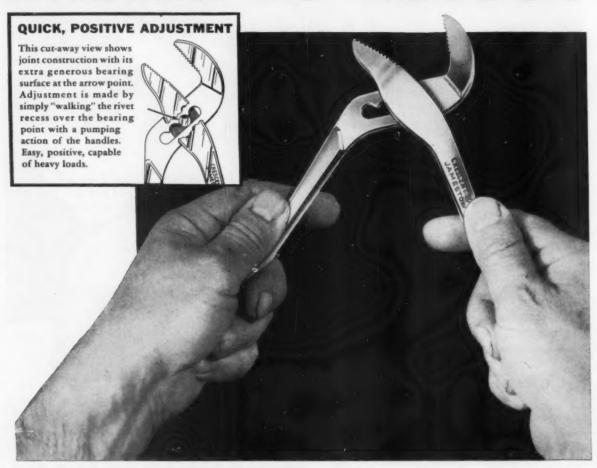
Please send me full information on an Airtemp franchise.

VAME

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CITY.....STATE.....

Not only stronger and thinner...but EASIER TO ADJUST



So easy that after a little practice it can be done with one hand. Yet once adjusted to any of its four positions, Crescent's P210 Utility Plier just won't slip under severe loads. Yes, here's a 12 ounce plier that performs like a pipe wrench . . . is stronger than any other Utility plier . . . thinner than any other Utility Plier . . . and retails for only \$3.00.

No. P210 will grip flat, square, hex or round objects up to $1\frac{1}{2}$ ". It measures $9\frac{1}{2}$ " overall and is finished in rust-resistant zinc plating.



Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK



STAINLESS STEEL DISTRIBUTORS CAN HELP YOU REDUCE COSTS AND INCREASE PRODUCTIVITY

Order Republic ENDURO Stainless Steel from your local Steel Service Center as needed. Use his warehouse stocks as your own. When you let the local Distributor carry your inventory in his warehouse you can increase the productivity from capital tied up in maintenance, floor space, labor, equipment, and insurance.

Also, your Distributor can give you expert, objective advice in the selection of the right grade of ENDURO Stainless Steel from some 35 grades at his disposal. Selection of the right

grade of stainless steel for right jobs can save you time and money.

A metallurgical problem? Republic offers you the services of experienced metallurgists through local Steel Distributors-listed below-to help you get the most value at the lowest cost.

There's a supply of stainless steel at the other end of your telephone. Call the nearest Republic Stainless Steel Distributor-your Steel Service



REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

CALL YOUR REPUBLIC ENDURO' STAINLESS STEEL DISTRIBUTOR

ALABAMA Reynolds Aluminum Supply Company, GEORGIA Allantic Steel Company, Atlanta 1, NEW YORK (Cent.) Schwerz and Cehn, Inc., Brooklyn, Edgcomb Steel of New England, LISCOURT Mammond Sheet Metal Company, St. Loois 5, Hubbell Metals, Inc., Kansas City 16, St. Louis 3, Marsh Steel Carparation, North Kansas City 16, Birmingham, J. M. Tull Metal & Supply Co., Inc., Pawtuce. TENNESSEE Hubball Metals, Inc., Mamphis, Metals, Inc., Bristol, Siskin Seel and Supply Company, Incorporated, Manager, Atlanta 1, Reynolds Aluminum Supply Company, Atlanta 1, NORTH CAROLINA IDETH CARCLINA Metal Service Corporation, Charlotte, Reynolds Aluminum Supply Company, Ralaigh, Vance Iron and Steel Company, Charlotte, Savannah, J. M. Tull Metal & Supply Co., Inc., Atlanta 2. ARIZONA run Metals & Supply Co., ARKAHSAS Hammond Sheet Metal Company, DAHO NEW HAMPSHIES incorporated, Chattanooga, Reynolds Aluminum Supply Company, Mamphis, Nashville, Vance Iron and Steel Company, Chattanooga, Pacific Metal Company, Edgcomb Steel of New England, Inc., Nashva,

MISSOURI

emmond Sh Fort Smith, Little Rock, ILLINOIS NEW JERSEY Chicago Steel Service Company, Chicago 32,

Little Bock,

CALIFORNIA

Ducommun Metals & Supply Co.,
Berkeley 10,
Berkeley 10,
National City,
Allen Fry Steel Company
Los Angeles,
E. M., Jergansen Company,
Los Angeles 54,
Oakland 23, EW HELSEY
Affas Steel Supply Company,
Morris Plains,
Benedici-Miller, Inc.,
Lyndhurst,
International Corporation,
Hillside,
Millar Steel Company, Inc.,
Hillside, INDIANA IDIANA
Hubbell Motals, Inc.,
Indianapolis 2,
Ohio Volley Hardware & Roofing
Company,
Evensville,

NEW YORK KANSAS Marsh Steel Corporation, Wichite Beat Tolk Aria Supply Company, Inc., Bronx 58, Beath, McCarthy and Rogers, Inc., Buffalo 5, Brace-Mueller-Huntley, Inc., Buffalo, Rochester, COLORADO

Morsh Steel Corporation,
Denver 16, OKLAHOMA KENTUCKY INECTICUT

Reynolds Aluminum Supply Company, Louisville, Williams and Company, Inc., Louisville 3, el of New England, nochester, Syracus, Bruce and Cook, Inc., New York 38, Eastern Metals Warehouse, Inc., Albany, FLORIDA
Caulley Steel and Supply
Company,
Fort Lauderdale, LOUISIANA Marsh Steel Corporation, Beton Rouge,

Albany, rmt Iron Works, Belfalo, MARYLAND Miemi, Orlando, Eagle Roofing and Art Metal Works, Inc., ARYLAND
Hill-ChaseSteel Company of
Maryland,
Baltimore 3, Balfalis, Relation Corp. of New York, Rochester, Hamsley, Inc., Brooklyn 32, K. & S. Merda Supply, Inc., Long Island City, Metal Purchasing Company, Inc., New York 1, MASSACHUSETTS rs Company,

Works, Inc., Tampa, Reynolds Aluminum Supply Company, Miami, J. M. Tull Metal and Supply Co., Inc., Inchanged Hawkridge Brott Boston 10, MICHIGAN Huran Steel Company, Detroit 16, Williams and Company, Inc., Pittsburgh 33,

HeiD The Ohio Metal & Manufecturing Co. Duyron 2, Verys Brothers, Inc., Columbus B. Williams and Company, Inc., Cleveland L. Cincinnesis, 29, Columbus 8, Toledo 12, TEXAS

E. M. Jorgensen Company,
Dallas,
Houston, UTAN
Structural Steel and Forge
Company,
Selt Lake City,
ZCMI Wholesale Distributors
Selt Lake City, E. M. Jorgensen Company, Tulsa, OREGON
American Steel Warehouse
Company,
Portland 14,
Podific Metal Company,
Furstand 9, VIEGINIA
Dominion Culvert and Metal
Corporation,
Roanoke 5,
Metals, Inc.,
Bristol,
Reywolds Aluminum Supply Co PENNSYLVANIA m Supply Company, Hill-Chase and Company, Inc., Philadelphia 34, Philadelphia 34, Potts-Farrington Company, Philadelphia 29, Norace T. Potts Company, Philadelphia 34, The Warren Company, Erie, WASHINGTON
Pacific Metal Company,
Seattle, CANADA Drummona Ltd., Toronte, Onterio Montresi, Quebec and McCall and Company,

22 Apprentices Complete Courses

The Lake County Sheet Metal Contractors' Association (Indiana) added 22 new journeyman sheet metal workers to the industry's labor force on June 5. The occasion was the graduation of the 4th year apprenticeship class of local 303, Sheet Metal Workers' International Association. The apprenticeship program is conducted under the guidance of a joint apprenticeship committee composed of sheet metal contractors and members of the union.



GRADUATING APPRENTICE is welcomed into the industry by Lake County joint apprenticeship committee members. (L to r) Gene Miller, Robert Flossman, Howard Houchins, Chester Nowak and Tom Daily

Apprentices are required to complete 7000 hours during a four year training period. The cost of the classes, which are held at night, is underwritten by both the contractors and the union; however, the apprentices must attend the classes on their own time. Contractors on the joint committee are Howard Houchins, Gene Miller and Tom Daily.

Participating in the completion ceremonies was a battery of speakers representing many segments of the industry as well as schools and other organizations connected with apprentice training. Presentation of completion certificates was made by Chester J. Nowak, business representative, local 303, following dinner and the speakers' program. Speakers included Ben Flock, vice president, Indiana Heating and Sheet Metal Contractors' Association; Tom Gannon, president, Lake County Sheet Metal Contractors' Association; Howard Houchins, chairman, Joint Apprenticeship Committee; H. M. Wilson, acting director, Hammond Vocational High School; Lester Cunningham, supervisor of vocational education, Gary schools; Ray Heninger, state supervisor, Bureau of Apprenticeship and Training, U. S. Department of Labor; Clyde M. Barnes, editor, American Artisan; Ross Mahoney, Scott-Choate Publishing Co.; and Joseph J. Kaberlein, secretary, National Joint Apprenticeship and Training Committee.

Attendance totaled 135, which included all apprentices now in training under the joint committee program. Lake County, Indiana, is located in the northwest portion of the state and includes the large cities of Hammond and Gary.

Chicago Association Installs Officers

Installation of New Officers of the Air Conditioning Contractors Alliance, Chicago dealer-contractor organization, was celebrated at a banquet held May 17. Dealercontractors, wholesalers, manufacturers and their representatives, accompanied by their wives, were in attend-



FOR OUTSTANDING SERVICE to the Air Conditioning Contractors Alliance, Edward N. Stahler (center) was presented with a commemorative plaque. Herb Tanis (left) and Ted Criel (right) offer their congratulations

ance. Over 600 saw the installation of the new officers who are: Herb Tanis, Ridgeway Heating Service, president; Allen Verbeek, Verbeek Heating Co., vice president; Larry Ingham, Aire Flow Heating Co., treasurer; and Theodore A. Criel, executive secretary. Edward N. Stahler, Robinson Furnace Co., the immediate past president who has served for two years, was awarded a commemorative plaque.

Michigan Sets Up Group Insurance Plan

THE MICHIGAN Heating and Sheet Metal Association has launched a group insurance plan for employees of dealer-contractor, manufacturer and distributor members. The program is being offered to about 200 companies now affiliated with the association, which employ about 5000 workers. Charles S. Flynn, president, said that the cost to workers enrolling in the plan is equivalent to rates paid by workers employed by firms with about 250 persons on their payrolls.

Officers and directors of the association met recently in Lansing to discuss projects to be undertaken during the coming year. Present plans call for a concentrated (Continued on page 84)



THE FASTEST GROWING NAME IN YEAR ROUND AIR CONDITIONING

- 1. Gas-fired Heatwave Furnace is adapted for LP Gas use, converts any gas into heat more economically!
- 2. Heat Exchanger is of heavy gauge, die-formed steel, electricallywelded into a rugged one-piece, gas-tight unit, specially designed for rapid heat transfer.
- 3. Burners are cast iron with milled slots for quiet, clean, efficient
- 4. Noise level is low . . . as a result of entire combustion chamber design to eliminate noise.
- 5. Blower is sized for both heating and air-conditioning . . · rubbermounted for quiet operation—pulls out like a drawer for easy
- 6. Automatic Control System is silent, gives safety, comfort and convenience, serves both heating and cooling systems.
- 7. Insulation is fireproof fibre-glass with reflective foil facing which holds radiant heat in fresh air stream, keeps down noise level.
- 8. Air Filter of the disposable type, removes dust and pollen from air.
- 9. Cabinet is of welded construction with attractive, two-toned, baked-

- on enamel which harmonizes with any surrounding decorations. No diverter or protrudances.
- 10. "ADD ON" feature of Heatwave year round air conditioning enables homeowners to buy furnaces and add-on waterless air conditioning whenever they desire without alterations to existing ductwork. (Evaporator housing finish matches color of furnace; is insulated to prevent condensation.)
- Vertical Hot Air Discharge in condenser allows grass and shrubs to grow around the unit without being harmed by discharged air.
 Appealing design blends with any landscape, appeals to the home-
- Easy to service, remote condenser features oil sight glass, detachable valves, liquid sight glass, moisture indicator and dryer. Standard parts used throughout.
- 14. New, larger condenser face area gives lower operating head pressure and lower liquid temperature, resulting in lower operating cost and reduced mechanical failure.
- 15. Unit is tested under A.S.R.E. conditions in Southwest's own laboratory.
- 16. You enjoy affiliation with a nationally-known manufacturer!

START INCREASING YOUR SALES NOW with HEATWAVE! THE LINE THAT GIVES YOU MORE TO SELL!

Find out how you can become a Heatwave Deeleri Write for full information today!

HEATING

AIR CONDITIONING

Manufactured by SOUTHWEST MANUFACTURING COMPANY

Aurora, Missouri

16. A Subsidiary of The F. E. Myers & Bro. Co., Ashland, Ohio

CLARAGE FANS

FOR YOUR



INDUSTRIAL

Blowers and exhausters for diversified industrial applications.

Standard models promptly available.

Clarage builds air handling and conditioning equipment exclusively concentrated know-how!

When you want equipment designed and built for "the long pull"to stretch your equipment dollar to the utmost — call on CLARAGE FAN COMPANY, Kalamazoo, Mich.



CLARAGE ... dependable equipment for

making air your servant

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES . IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal

STAINLESS COSTS LESS



stainless steel sheet for curtain wall panels is usually equal to or lower than aluminum when compared in thicknesses of equal indentation resistance? For example, Type 302 stainless steel, .022" thick is equal to .051" aluminum and costs only 62¢ per sq. ft., as compared to 67¢ per sq. ft. for 3003-H14 anodized aluminum.

For additional information on all gauges, fill in and mail the coupon.

Washington Steel Corporation

WASHINGTON, PENNSYLVANIA

WASHINGTON STEEL CORPORATION

7-A Woodland Avenue, Washington, Pa.

Gentlemen

Please send me full information on comparative costs of stainless steel vs. aluminum for curtain wall panels.

Name.

Position.

Company

Street_

City___

Zone State

membership campaign which will be under the direction of William Calverley, vice president of the group and an officer of the Royal Oak chapter. A statewide educational program, which includes securing speakers and educational films for local chapters, also is in the planning stages. This will be developed in cooperation with distributors and manufacturers affiliated with the association's auxiliary group. Another project involves the obtaining of state approval of a code governing the installation of heating and related equipment. A code prepared by the state group in conjunction with dealer-contractors, distributors and manufacturers will be proposed for approval of state legislators.

The group's 49th annual convention is scheduled to be held in Detroit in the latter part of February.

New Officers for Detroit Association

THE DETROIT Warm Air Heating Association reports that it now numbers over 200 active members. The group meets on the second Thursday of each month at the Fort Shelby Hotel, Detroit. All industry members in the area



NEW OFFICERS of the Detroit Warm Air Heating Association are (front row, I to r) Harold Bowie, treasurer; William O. Smith, vice president; Anthony Addis, president; and J. Biddle, executive secretary. Standing (I to r) are board members Al Keats, Stanley Craft, Wm. Van Damme, Earl McKenna, Al Norris, Tom McQuigan and Anthony Miller

are invited to attend monthly meetings to learn what the association has done for the heating and air conditioning industry and what it plans to do in the months to come.

Illinois Appoints Committee Chairmen

M. P. Lauerman, president of the Sheet Metal, Air Conditioning & Roofing Contractors Association of Illinois, met recently with officers and directors to discuss activities for the coming months and to appoint chairmen to head the group's various committees. New chairmen are:

Association Interrelations — George Sturm, Macomb Apprentice Education — Rollin Tippet, Waukegan Auditing — Jack Rubo, Batavia

Auditing — Jack Rubo, Batavia Bulletin — Lee Wagner, Peoria

Insurance — Rex Shaw, Jacksonville

Printing Materials - Rex Shaw, Jacksonville

General Convention — E. A. Schmidt, Springfield Convention Finance — Frank Mehrings, Peoria

Speakers — Lee Wagener, Peoria

Banquet and Entertainment — Frank Mehrings, Peoria

Resolution - J. G. Mielke, Chicago

Nominating - James Reuter, Kankakee

Hotel - Jay Harms, Peoria

Attendance Awards - M. P. Lauerman

In a move to get more ladies interested in its activities, the association has set up a ladies' auxiliary. Serving as chairman of the committee for the ladies' auxiliary is Mrs. E. A. Schmidt, Springfield. Committee members are Mrs. A. H. Schroeder, Mrs. Jay Harms, Mrs. Herb Drews and Mrs. M. P. Lauerman.

Grand Rapids Launches Ad Series

GUEST SPEAKER at the May meeting of the Grand Rapids Heating and Air Conditioning Association was Richard C. Young, Behler-Young Co. Mr. Young, an attorney and a member of the Michigan and Grand Rapids bar associations, discussed the effect the city air conditioning license system has had on the warm air heating dealercontractor. Dick Williamson, chairman of the association's advertising committee, led a short discussion on the display advertising program which consists of 13 threequarter page ads appearing in the building section of the Grand Rapids Press. The ads explain to prospective purchasers of new or older homes what they should look for in the home's heating plant and the type of performance they can expect from a modern heating or cooling system. Twenty firms are listed in the ads. Each company pays \$20 per insertion, or \$260 for the entire series.

OHI Pushes Phone Book Advertising Plan

THE OIL-HEAT INSTITUTE reports that its project for including oil heating dealers under a special listing in the classified pages of the telephone directory, accompanied by the OHI seal and under the term Oil Heat Institute, instead of under multiple listings, is progressing satisfactorily. The project, under the direction of M. J. Donahue, already has several chapters participating.

California Group Hears Talk on Finance

N. C. LUHMANN, vice president, First Western Bank, San Francisco, was the featured speaker at a recent joint meeting of the Institute of Heating and Air Conditioning Industries and the Refrigeration and Air Conditioning Contractors' Association. Mr. Luhmann spoke on "Contractor Working Capital, Financing and Bank Relations." The joint meeting was presided over by Kenneth N. Robertson, president of IHACI, and Don Kissell, president of RACCA.

(More association news on page 86)



"We just don't worry
about chipping
or flaking
when we lock-seam
WEIRKOTE®!"

If those difficult lock-seaming operations give you trouble, it's time to take the step that fabricator after fabricator is taking.

Switch to Weirkote zinc-coated steel as promptly as you can.

Weirkote's continuous process integrates the zinc and the steel so that the most complicated short-radii bends are made without chipping or flaking. Weirkote can be worked to the very limits of the steel itself — spinning, deep drawing, crimping, heading, twisting, the works. Comes through in perfect shape to give your products lasting anti-rust protection, such as they've never had before.

Weirkote's made that way to behave that way. And *now* it's treated to inhibit wet storage (white oxide) stain.

Can you think of a quicker, easier step to an even better product? To fewer rejects? To more peace of mind? To lower costs? And, perhaps most important, to the greater good will of customers who receive even more value for their money?

Write today for the free booklet that will give you lots of food for thought on the many advantages Weirkote can bring to your products and production. Weirton Steel Company, Dept. J-1, Weirton, West Virginia.



WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of



Golfers Meet at River Forest

THE FIRST MEETING of the Chicago Warm Air Golf Association was held at River Forest Country Club with members and guests turning in exceptionally low gross scores for so early in the golfing season. Jerry Anderson, Anderson Heating Co., reported a 77 for the 18 holes; Charles R. Bennett, a close second, turned in a 79.



WINNERS OF CHICAGO Warm Air Golf Association tournament are being decided by handicappers committee. Seated are Al Verbeek (left) and Hank Repple; standing, George Bunt and Lars Schulein

The Peoria system was used to adjust other scores to make the tournament competitive. Neil Manny, Robinson Furnace Co., won first place with a net 69. Others had net scores in the following sequence:

John J. Nimeth, Robinson Furnace Co., 74
Babe Frick, Robinson Furnace Co., 74
Otto Zeman, Barney Olson, Inc., 74
W. MacNider (guest), Alan Furnace Co., 75
Frank Schroeder, Austin Sheet Metal Works, 75
Ivar Anderson, Anderson Heating Co., 75
R. Shake, Arrow Petroleum Co., 76
Al Verbeek, Verbeek Heating Co., 77
Lars Schulein, L. E. Schulein Co., 77
George Bunt, Jones Heating & Air Conditioning, 77
Harry Himelblau, Himelblau Associates, Inc., 77
Dan Heffernan, Acme Furnace Fitting Co., 77
Hank Repple, Flo-Right Heating & Ventilating Co., 79
J. Zalkins, (guest) Co-op Heating & Sheet Metal Co., 79

Art Walters, Art Walters, Inc., 80
Larry Ingham, Aire-Flow Heating and Air Conditioning Co., 81

Ted Criel, Air Conditioning Contractors Alliance, 81 Harry Duerst, Lennox Industries Inc., 81 Les Repple, Flo-Right Heating & Ventilating Co., 81 J. Gats, Gats Heating Co., 82 A. MacNider, Alan Furnace Co., 83

George Zoubek, Co-op Heating & Sheet Metal Co., 84 R. P. Johnsen, Atomatic, Inc., 85

T. Jones, Condensation Engineering Co., 88

Two additional outings are scheduled for the Chicago Warm Air Golf Association during 1958. The second outing will be held Tuesday, July 22, at the Itasca Country Club and the third on Tuesday, September 30, at the Ruth Lake Country Club.

Recently elected officers of the golf association are George Anderson, Condensation Engineering Corp., president; Hank Repple, Flo-Right Heating & Ventilating Co., vice president; Allen Verbeek, Verbeek Heating Co., treasurer; George Bunt, Jones Heating & Air Conditioning, secretary; and Lars Schulein, L. E. Schulein & Co., handicapper.

Coming Events

July

July 22 — Chicago Warm Air Golf Association tournament. Itasca Country Club, Itasca, Ill. George Bunt, Secretary, Jones Heating & Air Conditioning, 305 W. Hillgrove, La Grange, Ill.

September

Sept. 30 — Chicago Warm Air Golf Association tournament. Ruth Lake Country Club, Hinsdale, Ill. George Bunt, Secretary, Jones Heating & Air Conditioning, 305 W. Hillgrove, La Grange, Ill.

October

Oct. 13-15 — American Gas Association, annual convention. Municipal Auditorium, Atlantic City, N.J. C. S. Stackpole, Managing Director, 420 Lexington Ave., New York 17.

December

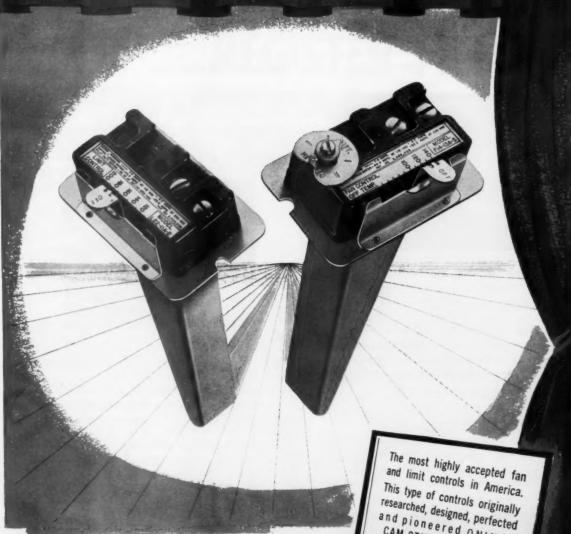
Dec. 1-3 — National Heating and Airconditioning Wholesalers, annual convention. Hotel Statler, Cleveland. W. R. Bull, executive director, 1200 W. Fifth Ave., Columbus, Ohio.

Dec. 2-3 — National Warm Air Heating and Air Conditioning Association, committee meetings. Statler Hotel, Cleveland. George Boeddener, Managing Director, 640 Engineers Bldg., Cleveland 14.

Dec. 4-5 — National Warm Air Heating and Air Conditioning Association, annual convention. Statler Hotel, Cleveland. George Boeddener, Managing Director, 640 Engineers Bldg., Cleveland 14.

GREAT PERFORMERS ARE OFTEN IMITATED

-BUT NEVER DUPLICATED



Coming Attractions:

Oil Burner Primary Controls .

Valves . Pressure Regulators .

Damper Motors - Room Thermostats

researched, designed, perfected and pioneered ONLY by CAM-STAT Incorporated.

Imitation of design does not mean duplication of performance.

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EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For additional product information which is available, see this month's New Literature department

Remote Heat Pumps

"Weathertron" line of remote heat pumps designed to save space required for indoor air handling section —General Electric Co., Air Conditioning Dept., Dept.



AA, 5 Lawrence St., Bloomfield, N.J. Air source units are in three sizes rated at 23,300, 33,900 and 48,000 Btu. Indoor blower system with heating and cooling element is less than 2 ft square, 21½ in. high. Air is directed upward, downward or horizontally. Compressors have internal thermal protection and metal-to-glass leads; blower wheels are direct driven. Supplementary heaters can be installed anywhere in supply duct work.

Electric Saw Blades

Models HD-8 heavy duty and S6 contour blades for most electric saws for starting holes, roughing in, ripping and cross-cutting—Malco Products, Dept. AA, 405 E. 48th St., Minneapolis, Minn. Heavy duty



blades, in five models from $3\frac{1}{2}$ to 12 in., are designed for sawing wood, plaster and imbedded nails and starting holes. Each size has teeth spacings of 6, 8, 10 and 18 teeth per inch. Blade seats itself at slight angle for faster cutting and less wear, the company states. Wider set of teeth is said to prevent binding. Contour blades for roughing-in and scroll cutting feature extra wide set and slight hook in teeth. Blade tapers toward front end to permit sharp turns, Blades

are pitched widely to alternate sides to clear chips and dust.

Insulation Adhesives

"Fastak" quick-bonding and "Ductak" slower setting duct insulation adhesives which are applied by brush or roller—Cain Mfg. Co., Dept. AA, 1111 Fifth Ave., N., Birmingham, Ala. "Fastak" is designed to hold heavy insulating materials without auxiliary clips or other holding devices and set quickly so ducts may be



brake formed immediately after application of insulation. "Ductak" requires about 1 hr setting time before duct may be brake formed. Both adhesives are waterproof, cover 230 to 270 sq ft per gal., and have temperature range of 30 to 325 F for blanket insulation and 30 to 250 F for board insulation. Adhesives bond glass fiber, asbestos and cork to metal ducts, seal butt joints, laminate various thicknesses of insulation together and adhere laps of aluminum foil or vapor barrier paper facings to insulation.

Inshot Burner

MODEL INB 75-175 INSHOT burner with set of drilled orifices from 75M to 175M and 3 in. telescopic adjustment which covers variety of sizes—Columbia Burner Co., Dept. AA, 729 Ewing St., Toledo 7, O. Installation involves securing mounting plate, inserting burner into blast tube and securing two screws. Pilot is removed by loosening a screw and lines connected to it without dismantling the burner, according to the manufacturer.

Centrifugal Fan, Unit Heater

FOUR SIZES of centrifugal fans in capacities up to 55,152 cfm, and 10 gas-fired automatic unit heaters in capacities ranging from 25,000 to 250,000 Btuh—



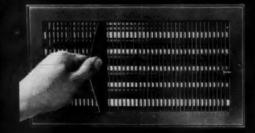
PICK OF THE CROP in the REGISTER FIELD

No. 1000 U.S. BASE DIFFUSER HAS PROVEN ITS SUPREME POSITION WITH PERIMETER SYSTEMS

The Set-Lock is an original — Not a Copy. The Slide-Plate
Bottom is an Original that Saves Cutting and
Installation Time. No. 1000 DIFFUSERS are made in
Two and Four Foot Sizes with which any desired Multiple
lengths may be assembled.

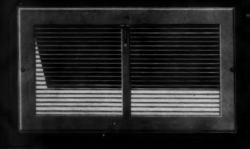
No. 256 U.S. A-C REGISTER

Excels all similar lines in PRICE, QUALITY, and PERFORMANCE. Very competitively Priced. Very adaptable for Heating and Cooling Air Conditioning in all Phases and Types. Probably the most versatile of all Air Conditioning Registers.



No. 153 U.S. A-C REGISTER

This fine A-C REGISTER has always been FIRST in value among single-valve designs. Now equipped with BALANCING SET-LOCK — No Basement dampers needed.





"MADE BY ENGINEERS WHO KNOW HOW"

WRITE FOR LATEST CATALOG



UNITED STATES REGISTER COMPANY

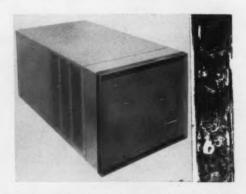
BATTLE CREEK, MICHIGAN

MINNEAPOLIS . KANSAS CITY . ALBANY

Ilg Electric Ventilating Co., Dept. AA, 2850 N. Pulaski Rd., Chicago 41. Fans are direct-connected or belt-driven. Airfoil blade reduces eddy currents and turbulence, shock losses and drag. Fans are suitable for applications up to 9 in. static pressure. Wheel, inlet cone and sides of housing are aluminum. Unit heaters have controls for all gases. Units are smaller and lighter than predecessors, with same structural features. Hanger assembly can be adjusted to any mounting height; no couplings or unions are required.

Air Cooled Air Conditioners

REDESIGNED self-contained, air cooled horizontal summer air conditioners in 2, 3 and 5 ton sizes—Typhoon Air Conditioning Co., Div. of Hupp Corp., Dept. AA, 505 Carroll St., Brooklyn 15, N.Y. Featured is air volume control which is set at installation to provide proper amount of conditioned air for each application.



Plenum attachment with adjustable directional grille is available for free air delivery without duct work for commercial applications. Units can be installed through attic or basement wall or in crawl space in residences, or through wall or roof or suspended from ceiling in commercial applications. Several units can be combined for zone control jobs. The 3 and 5 ton models have two stage controls.

Welding Electrode

"FLEETWELD 7MP" type E-6012 electrode for general production and maintenance welding operations—Lincoln Electric Co., Dept. AA, 22801 St. Clair Ave., Cleveland 17, O. Iron powder is added to electrode coating for faster operation. Unit is classed as all-position, a-c and d-c, mild steel electrode. Features claimed include: operation on alternating current with low, open voltage machines; increased deposition rate and electrode life; soft arc; medium penetration; reduced spatter; smooth bead; convenient slag removal. Electrode is in ½, 5/32 and 3/16 in, sizes.

Electronic Dust Precipitator

"ELECTRO-CELL" high velocity electronic precipitator which operates at face velocities of up to 600 fpm— American Air Filter Co., Inc., Dept. AA, 215 Central Ave., Louisville, Ky. Individual cells contain positive and negative collector plates fixed in position; each



cell has its own set of vertical ionizing wires. Aluminum collector cells are available in 16 and 20 in. heights, 24 and 36 in. widths. Capacities are 800 to 2750 cfm. Size and power requirements have been reduced from previous models. Collector plates are designed for minimum depth and minimum spacing between surfaces, and collection efficiencies up to 97 percent are obtainable, the manufacturer states. Washing and oiling are automatic.

Power Roof Exhauster

"DYNAFAN" TYPE LC roof exhauster with low silhouette, designed for use where fumes are not harmful to motor and bearings—Penn Ventilator Co., Inc., Dept. AA, Goodman St. above Allegheny Ave., Philadelphia 40. Designed for minimum height, unit replaces overhung fan wheel with a wheel which straddles both bearings. This feature is also claimed to provide better balance and longer bearing life.

Hot Water Heaters

LINE OF AUTOMATIC oil-fired hot water heaters with glass lined steel tanks in 30 and 50 gal. capacities and copper tanks in 30 and 45 gal. capacities—The Carlin Co., Dept. AA, 912 Silas Deane Highway, Wethersfield 9, Conn. The 30 gal. unit, fired at 1.00 gph, heats water to 100 F temperature rise at 120 gph or full tank every 15 min. Burner flame pattern is designed especially for round, built-in refractory combustion chamber. Featured are 2 in. blanket of glass fiber insulation, three-point burner mounting, removable top covers and baked enamel outer tank jacket finish. Constant ignition relay and immersion hot water control are standard equipment.

I've built customer confidence with



48 YEARS IN THE MANUFACTURE OF PRECISION PRODUCTS

Sell Draft King Chimney Caps



You make money . . . Customers save money!

The Perfect Cap for all Chimneys, Flues and Ventilators.

You'll do a volume business with Draft King when customers learn of its money-saving benefits.

Draft King turns flue gases into perfect heating combustion—eliminates chimney clogging soot and costly fuel waste. No moving parts —nothing to wear out. Made of either all-weather galvanized steel or aluminum.

Other DRAFT KING Customer Benefits:

- · Wind, rain, snow and ice proof
- Eliminates damaging chimney fires
- · Acts as a spark arrester
- Prevents pilot blowouts
- Easy to install
- Improves appearance of chimney
- Priced under competitive makes

Stops ALL draft troubles! UP DRAFTS DOWN DRAFTS Manufactured by A. R. WOOD MFG. CO. Luverne, Minnesota

equipment developments

(Continued

Gas-Fired Furnaces

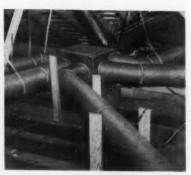
"Economatic" Line of gas-fired furnaces in lowboy (4 models), highboy (2 models) and counterflow (2 models) arrangements—Kalamazoo Furnace & Appliance Mfg. Co., Dept. AA, 100 Rochester Ave., Kalamazoo,



Mich. Designed for minimum space requirements, units have sectional heat exchangers, heavy-duty motors and blowers mounted on rubber and pressed steel burners. Model GL lowboys range from 64,000 to 120,000 Btu; GH highboys are rated from 80,000 to 100,000 Btu; GC counterflow units range from 80,000 to 125,000 Btu. Units burn either natural or propane gases.

Hammer, Hatchet Line

"Estwing" LINE of one-piece forged hammers and hatchets, designed for proper balance, unaffected by usage W. A. Whitney Mfg. Co., Dept. AA, 636 Race St., Rockford, Ill. Included are 12 and 28 oz curved- and straight-claw hammers as well as engineer's, ball peen, tinner's setting and riveting and masonry hammers, and roofing hatchets. Leather grip is said to be permanently bonded: one-piece metal construction eliminates breakage, splintering and loose heads. Tools have blue painted finish; polished finish is also available. Leather grip is not affected by oil, perspiration or grease, the company reports.



G-B DUCT DISTRIBUTORS

(See ad on facing page)

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Shook & Fietcher Supply Co.
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DALLAB, Insulation Supply Co., Inc.
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DENVER, Gene Wright Lumber Co.
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DETROIT, J. L. Johnston Co.
FORT WORTH, The Bracken Company
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INDIANAPOLIS, Central Supply Company
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JACKSONVILLE, Florida Air Conditioners
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Fiber Duct Distributors

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NONFOLK, Va., Automatic Equipment Sales Co.
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RICMOND, Automatic Equipment Sales Co., Inc.
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ST. LOUIS, Hollander & Co., Inc.
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TULSA, Ball Distributing & Engineering Co.
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WINSTON-SALEM, N. C., Air Conditioning Supply



During the rush season, you'll

INSTALL MORE JOBS, MAKE MORE MONEY with new G-B DUCT!

Don't miss the boat during the busy months that lie ahead — see your local distributor of new G-B Duct right away about the first prefabricated round glass fiber duct! Actual cost comparisons reveal that G-B Duct, compared with metal insulated ducts, can save you 22%-27% on application costs — and up to 50% in installation time!

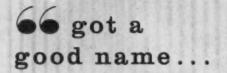
Here's why: G-B Duct comes in one-piece 6-ft. sections, ready-to-use — no pre-assembly, no folding. With G-B Duct there are no longitudinal flaps or seams to be stapled and taped — no messy adhesives and no drying time. G-B Duct can easily be cut and fitted with a knife and the templates provided, and sheet metal collars and connections are readily available. Sizing is no problem because G-B Duct is made in the same nominal sizes as round sheet metal pipe and fittings.

For every heating, air conditioning or combination job, use G-B Duct—and you'll save time and money. And after installation, you'll have no worries about a "tight" job. Uniformly thick glass fiber walls provide positive thermal insulation and maximum sound absorption, while the continuous airtight plastic vapor barrier sleeve positively prevents condensation.

FOR NAME OF YOUR NEAREST SUPPLIER, SEE ADJOINING COLUMN

GUSTIN-BAGON Manufacturing Company GB

Thermal and acoustical glass fiber insulations • Pipe couplings and fittings • Molded glass fiber pipe insulation 226 W. 10th St., Kansas City, Mo.



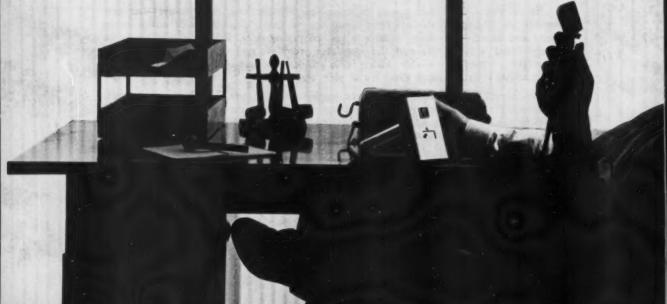
this new fan and limit control*. Ought to be worth something in our pitch to the field. Gives us a quality story... and the outfit's got branch offices from here to the DEW line. This is something we can sell to our key distributors. These guys know what a strong field service organization means in a pinch. Won't cost us any more than the one we're using now—so let's give them a try on the next run. Better get off a bulletin to our field men tomorrow.

** The General Controls L-44 is available in 3 models: fan control, limit control, and combination fan and limit control. Gives you competitive price advantages, famous-name backing, and 42 factory branch offices. Write today for full information, or check the yellow pages for your nearest factory branch office.



Manufacturers of America's Finest Automatic Controls for Home, Industry and the Military Glendale, Celif. Sobkle, III. * Guelph, Ontario, Canada Six Planta-42 factory branch offices serving the United States and Canada





equipment developments

(Continued)

Air Cooled Unit

AIR COOLED summer air conditioning unit rated at 71/2 hp and featuring 360 deg air distribution-Heating and Air Conditioning Div., Stewart-Warner Corp., Dept. AA, 1826 Diversey Pkwy, Chicago 14. Floor model or suspended unit can be used



as direct cooling unit or ducted to provide central cooling for multiroom areas. Air or water cooled free standing units are available in 2, 3 or 5 hp models with remote condensing units; 71/2 hp models have cooling capacity of 84,000 Btu, require 3phase electrical outlet. Horizontal units have twin blowers and fourway louvers. Replaceable filter can be removed from either side or rear; drain and refrigerant lines leave at back of unit.

Oil-Fired Water Heater

OIL-FIRED, packaged water heater in three sizes, all with 30 gal. reserve tanks, said to heat 135, 200 or 270 gph-Petro, Dept. AA, 3170 W. 106th St., Cleveland 11, O. Bottom of heat exchanger is exposed to direct radiant heat from burner and entire outer surface of glass-lined tank absorbs additional heat from rising combustion gases, said to produce low stack temperature. Combustion chamber is lined with lightweight insulating refractory to minimize warm-up periods of incomplete combustion. Heater has no tubes. Flue liner is aluminized to reflect heat and prevent rust.



for slab perimeter heating or combination heating and cooling!

Save installation time, labor and money-without lowering construction quality! Economical sonoair-DUCT handles easy, levels quickly. 23 sizes, 2" to 36" I.D., with the larger diameters ideal for commercial and industrial heating and cooling where duct is encased in concrete. Meets and exceeds F.H.A. criteria and test requirements for this type product. Free installation manual. See our catalog

For complete information and prices, write

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OPPOSED ACTION LINKAGE



New Concept in Opposed Action Damper Construction

ACCURATE! and as easy to fabricate as conventional dampers.



"OPAX" Linkage Set is Complete as Shown

- "OPAX" Set attaches directly to blade No Stands.
- Accurately operates damper blades as narrow as 5"
- Extremely simple to lay-out and install.
- Neva-Bind construction assures smooth operation... Compensates for damper inaccuracies.

Write now for complete information and local distributor — or . . . send \$1.00 for sample "OPAX" Linkage Set.

THE GREATEST NAME IN SHEET METAL SPECIALTIES











DURO-DYNE CORP., Route 110, Farmingdale, New York

equipment developments

(Continued)

Year 'Round Units

"COMFORT CENTER" combination heating and summer air conditioning system which includes electronic air filter—York Corp., Subsidiary of Borg-Warner Corp., Dept. AA,



Roosevelt Ave., York, Pa. Combination unit measures $59 \times 51 \times 27$ in. Built-in filter is said to trap particles smaller than 1/25,000 in. Furnace is gas-fired unit; air conditioning coils and electrostatic air cleaner are mounted on top of furnace. Filter is mounted over return air opening; cooling coil is mounted over the supply opening of the furnace.

Blower Motors

SINGLE-PHASE motors for belt driven fans and blowers rated from 1/3 to 1 hp-Electric Motor Div., A. O. Smith Corp., Dept. AA, 531 N. 4th St., Tipp City, O. Motors have dynamically-balanced, pressure-cast rotors, snap-action switch actuator, prelubricated and sealed ball bearings, "oversize" pure silver switch contactor, windings and insulation dipped and baked in synthetic resin varnish, resilient mounting rings on bearing hubs, rolled steel frame and cast iron end bells. Mounting base and shaft extension dimensions are same for all fractional hp motors. Voltages are 115 and 115/230. All motors are wound for rotation in either direction. All motors are 1725 rpm, 60 cycle open drip-proof construction.



Performance of

REVERE-KEYSTON

2-PIECE CAP FLASHING

on Milliken power station resulted in its being re-specified on many additional jobs

When the Milliken Station of the New York State Electric & Gas Corporation at Ludlowville, N. Y., was in the design stage a set of plans was submitted to Revere's Technical

Advisory Service for comments and suggestions.

After careful examination Revere recommended that the Thru-Wall Flashing required should be installed in accordance with procedures recommended in the Revere Manual, "Copper and Common Sense." For the cap flashing the new Revere-

Keystone 2-Piece Cap Flashing was recommended.

These recommendations were accepted by Gilbert Associates, Inc., and the installation made. The results were so satisfactory that they have been re-specifying this 2-Piece Cap Flashing, wherever practical. Here are the reasons: FREE WALL—It provides the roofer with an unobstructed wall

face for the placement of the base flashing. Receiver is laid in during construction of wall, while the insert is snapped in only after all roof and base flashing work is finished.

STRAIGHT CLEAN LINE, PERMANENT GOOD LOOKS-Factory-bent to precise dimensions.

PERFECT WEATHER-SEAL-Factory-formed angles on the receiver and insert cause latter to hug the base flashing, weather-seal effectively.

NON-LEAKING DAMLOCK-Requires no soldering except for special conditions.

CAN BE DISASSEMBLED—Insert can be removed with a simple tool and used again, with no loss of neatness or snugness, when the built-up base flashing or roofing has to be repaired.

*Patent No. 2,641,203 Other Pats. Pending-

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801 230 Park Avenue, New York 17, N. Y.

Mills: Rome, N. Y.; Baltimore, Md.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles, Santa Ana and Riverside, Calif.; New Bedford, Mass.; Brooklyn, N. Y.; New-port, Ark.; Fl. Calboun, Neb. Sales Offices in Principal Cities, Distributors Everywhere.



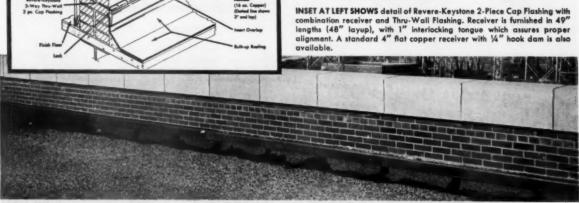


PHOTO SHOWS neat-appearing, tight-hugging, easy-to-install Revere-Keystone 2-Piece Cap Flashing completely installed. There were about 3,000 sq. ft. of Revere-Keystone 2-Piece Cap Flashing and 3-Way Thru-Wall Flashing, both plain and lead coated, used on this building housing a 135 megawatt writ which was put into operation in June, 1956.

(Continued)

Ventilator-Skylight

"Conso" combination skylight and roof ventilator made of lightweight plastic and steel—Consolidated General Products, Inc., Dept. AA, 24th and Nicholson Sts., Houston 8, Tex. Glass fiber-reinforced polyester plastic hood in shape of dome passes about 2/3 of outside light, admitting diffused illumination. Shatter-



proof plastic hood is resistant to atmospheric and chemical corrosion. No extra supporting members or special reinforcements of structure are required. Fan, sheathed by galvanized steel housing, is powered by heavy-duty electric motor with automatic thermal overload cutoff switch. Counter-balanced, gravity-operated automatic louvers beneath hood control air flow. Louvers have nylon bearings. Ventilators are in 18 sizes with fans from 24 to 48 in. diameters. Hoods range from 45 to 80½ in. square. Complete units weigh from 127 to 335 lb.

Electronic Air Cleaners

Series 300 of "Compact Line" electronic air cleaners, raising number of models to 15 with 10 capacities ranging from 800 to 9600 cfm, in horizontal or vertical styles—Electro-Air Cleaner Co., Inc., Dept. AA, Olivia and Sproul Sts., McKees Rocks, Pa. All parts are guaranteed for five years. "Inside curve" ionizer utilizes intense area of ionization, the company explains; "inside curve" on face of negative electrodes provides maximum area of electron discharge. Plate spacing has been reduced by 5/16 in. to increase intensity of electrostatic field between collecting plates. Efficiency rating is 90 percent, according to the company.

Spot Welder

"Lectro Spot" welder with built-in electronic timer designed to produce uniform welds—Miller Electric Mfg. Co., Dept. AA, 718 S. Bounds St., Appleton, Wis. Timer and handle pressure multiplier are adjustable. When operating handle is depressed, tongs grip work at predetermined pressure, start switch is actuated and







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<u>is money in</u> <u>your pocket</u>

Increased profits for you come from Fraser-Johnston top quality engineering and construction which assure you...

FAIR MARGIN

SATISFIED CUSTOMERS

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PROPERLY SIZED INSTALLATIONS

FEWER
CALL BACKS

Fraser-Johnston's basement, upflow, counterflow and horizontal furnaces with matching coils and condensing units make up today's "value line of the air conditioning industry."

Write for complete catalog and prices.





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TRIPS BETWEEN
SHOP and JOB
The combination brake and bar easily

slips into the slotted stand. The stand folds up to a convenient 36" x 24" flat package, making it truly portable. Design provides even pressure along

Design provides even pressure along the entire 36" length of shoe using sheets up to 20 gauge.

Sturdily built, Fayette will give you many years of useful, money saving service. Order today . . . start cutting costs immediately.

MAKE UP . . . CHANNELS ANGLES S AND DRIVE CLIPS SIDE RAILS END CAPS



PITTSBURGH SEAM . WALL STACK, DUCT AND OTHER PARTS AND FITTINGS

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TERRITORIES AVAILABLE
Write or Wire Today.

PAYETTE MFG. CO.

210 MAIN ST.

MORENCI, MICHIGAN

equipment developments

(Continued)

weld sequence starts. Light shows when current is on. Unit is available in three models: 110-v or 220-v 1.5 KVA models weighing 29 lb; and 220-v 2.5 KVA size at 39 lb, the company reports.

Gas Pressure Regulator

Model RV-31 gas appliance pressure regulator with outlet pressure tap located on top of regulator—Maxitrol Co., Dept. AA, 12200 Beech Rd., De-

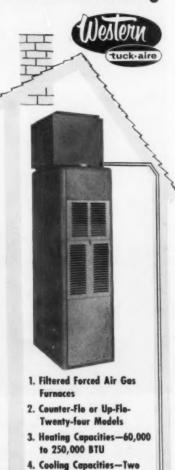


troit 39. Outlet pressure tap and smaller dimensions than predecessors' make unit suitable for water heaters, incinerators and other equipment with limited mounting areas. Compressed width dimension is 2 15/16 in.; overall height is 2 7/16 in. Pipe turn radius is 1½ in. Capacity for main burner and pilot load applications is 120 (pilot flame) to 95,000 Btuh of 800 Btu per cu ft, 0.7 specific gravity gas.

Gutter Strainers

LINE OF ROOF gutter strainers in round and square styles and four types of gutter-matching wire alloys —Wiretex Mfg. Co., Inc., Dept. AA, 40 Mason St., Bridgeport 5, Conn. Wire alloys are in galvanized steel, copper, aluminum and stainless steel. Strainers are crimped and spaced for added strength for gutters. Strainers are sized to fit all types of gutters and are available in various wire size selections, according to the manufacturer.

The New Look In Year Around Air Conditioning



6. Matching Evaporator Coils

to 71/2 Tens

5. Air Cooled Remote

Condensing Units



tuck-aire FURNACE COMPANY 2045 Evans Avenue - San Francisco, Calif.

"PIONEERS AND LEADERS IN AIR CONDITIONING COMFORT"



"This sheet has just the right stiffness and ductility"

He's talking about a sheet of Bethcon galvanized steel, and his enthusiasm is shared by an ever-growing number of sheet-metal workers.

Bethcon has that very desirable combination of stiffness and ductility because of Bethlehem's up-to-the-minute continuous galvanizing lines, which include a continuous annealing process. This treatment turns out sheets which are easy to work into a strong, rigid sheet-metal product.

Bethlehem's continuous galvanizing process bonds the zinc to the steel so tightly that it virtually eliminates peeling or cracking of the coating. Even when you double the sheet back on itself, the zinc stays put. The coating is uniform, too, both in appearance and in thickness. Since a Bethcon sheet has no drip end, it has no bothersome bead.

You can order Bethcon in 13-gage and lighter, in either plain open-hearth or copper-bearing steel. A Bethlehem representative will gladly call to discuss your sheet-metal operations with you, and to give additional information about Bethcon. Just call or write to the Bethlehem sales office nearest you, or write to the address below.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation.

BETHLEHEM STEEL



(Continued)

Furnace Line

Series 10 "Imperial" line of gas-fired furnaces in five sizes of counterflow models from 80,000 to 160,000 Btu and nine sizes of highboy models rated from 75,000 to 200,000 Btu—The Payne Co., Dept. AA, 855 Anaheim-Puente Rd., La Puente, Calif. Featured are "Black Iron" or "Astrogard" coated heating elements for resistance to corrosion and burn-out. "Astrogard" is a formula of 23 elements combined for fusion to metal by special process. It is applied to all the company's products which have coated heating elements.

Penthouse Ventilators

Types DRP and BRP penthouse ventilators designed for moving large volumes of air at low static pressures —Power Line Fan Co., Dept. AA, Plainfield, N.J. Streamlining is said to reduce air turbulence; undercoating with sound-deadening material also cuts down noise. Anti-corrosive coating makes units weather-proof; special insulation is available to prevent condensation within penthouse, save heat during winter and further reduce operational noise. Featured is large front overhang with built-in water bypass tray

that collects and drains rain water which comes through louver. Units are in direct or belt-driven models.

Self-Contained Air Conditioners

FIVE MODELS OF self-contained, air cooled summer air conditioning units for residential and commercial applications, in 2, 3 and 4 hp models with 19,700



to 40,000 Btuh capacities—llg Electric Ventilating Co., Dept. AA, 2850 N. Pulaski Rd., Chicago 41. Low speed blowers and glass fiber insulation are designed to reduce operational noise. Corrosion resistance of sheet metal parts permits outdoor installation. Overall dimensions of 4 hp model are $591/2 \times 32 \times 24$ in.

TOTOEAL YOURSELF A PAIR OF "NATURALS"

- 1. ONE SELLS THE OTHER! Prospects for fuel oil filters and furnace humidifiers are frequently one and the same. Combine these two profitable lines and one gets business for the other!
- FAST, PROFITABLE INSTALLATIONS! No complicated assembling or fitting — and no service "call-backs". General Humidifiers and Filters are trouble-free . . . each a leader in its field.
- SURE, YEARLY REPLACEMENTSI Easy, added profits from yearly replacements of General Filters Replacement Cartridges (fit all leading filter makes!) and "Porous Weave" Evaporating Plates.





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He Stocks Both . . . How About You?

General HUMIDIFIERS

General Fuel Oil Filters and General "800" Furnace Humidifiers go "hand-in-hand" in sales—and profits. General Filter users are prime prospects for humidifiers—and vice versa. When you service one, recommend the other. Doubling up your sales effort saves time, service trips and money—makes handling GENERAL doubly profitable!

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IN CANADA: Canadian General Filters, Ltd., 39 Crockford Blvd., Scarborough, Ontaria

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 Heating, cooling, fittings, controls, repair parts, etc.
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- 3. REGULAR SALES CALLS
 Personalized help by an expert.
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 Material you want when you want it.
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 Your capital is not tied up in inventory.
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 Best sales-clincher for your prospects.
- PROMOTIONAL PROGRAM Financial and material help in your advertising.

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Call on him — convince yourself!

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For the name of the International Wholesaler nearest you and a complete International catalog, write International Heater Company, Utica 2, New York

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for 93 Years

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offers continuing Customer satisfaction in its Complete Line of Heating and Air Conditioning Equipment

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STRATTON & TERSTEGGE CO., Inc.

equipment developments

(Continu

Metal Fastening Unit

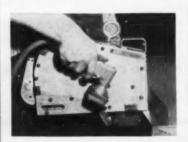
"BUT-N-HOLD" machine for metal-tometal fastening without rivets, bolts, screws, soldering, welding, slots or tabs—Bar-Brook Mfg. Co., Inc., Dept. AA, 6135 Linwood Ave.,



Shreveport, La. Button-and-slot fastening device requires only a ball peen hammer. Die adjustments provide for variety of button spacings. Portable bench tool weighs 30 lb. Unit is especially designed for products such as louvers, ducts and structural members, according to the manufacturer.

Metal Stapler

Model P-10 portable metal stapler for heavy-duty fastening jobs on steel, copper, aluminum, plastics, fibers, etc.—Bostich, Dept. AA, 2002 Briggs Dr., East Greenwich, R.I. Stapler handles maximum combined thickness of approximately 0.080 in.



steel, depending on hardness; unit fastens up to ½ in. of other materials. Reversible grip handles permit operation in any position. Trigger is located in handle. A 360 deg

FROM MASTER-CRAFT



NEW LARGE CAPACITY SOOT MASTER FURNACE CLEANER

The engineering principles used to develop MODEL 581 have made furnace cleaning more economical than it has ever been before.

The THROWAWAY filter bag provides a safe easy method of soot disposal.

Lightweight, more powerful, new larger capacity container, larger filter area designed for lasting suction, plus new power cooling design make this machine quieter and easier to use than any other suction cleaner available. Protective rubber bumper around base.

THAN EVER BEFORE Only \$127.50 Slightly higher in Casada and west of Rockies

Slightly higher in Canada and west of Rockies COMPLETE WITH 27" CREVICE TOOL, UTILITY NOZ-ZLE, 6' FLEXIBLE METAL HOSE, 10' DUCK COVERED HOSE & 10 DISPOSABLE FILTERS.

Blewer MODEL 581A available at slight extra cost. Send for literature. Jobber-Distributor inquiries invited.

MASTER-CRAFT

SUPPLY CO., INC. W. HAVERSTRAW, N. Y.

Manufacturers & Suppliers of Cleaning Equipment Distributed in Conada by Imperial Refractories, Ltd. Stainless steel installations like this are a boon to prestige as well as profits. This building is owned by the New Jersey Turnpike Authority. All stainless steel architectural work, except door moldings, was done by Chris Anderson Roofing Company, Perth Amboy, New Jersey.



Why Stainless Steel Jobs Help Boost Profits

Every day, more construction jobs are "going stainless steel" for trim, mullion covers, building fronts, signs, and curtain wall panels. Architects prefer this attractive metal because it blends naturally with other building materials. Owners like its rich appearance, durability, and ease of maintenance.

It will pay you more ways than one to get in on this growing stainless business. Certainly, there are handsome profits for the firm that works with stainless steel. But there's more than that. Eye-catching stainless installations build prestige for your firm . . . lead to more jobs.

If you would like help with stainless work, just call on your nearby distributor of Armco Stainless Steels. He will gladly work with you on grade selection, fabricating techniques, and business-getting ideas. His complete stocks of Armco Stainless Steels mean quick delivery, too. If you don't know his name, please fill in the coupon and mail it to us. We'll help you get in touch with him.

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ARMCO STEEL



Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

equipment developments

(Continued)

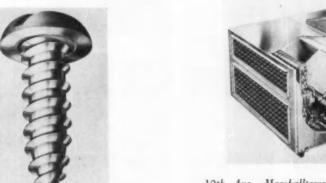
rotation of entire unit is provided by ball bearing attachment. Unit weighs 24 lb, requires 75-90 psi air pressure.

Sheet Metal Screws

"HI-THREAD" self-tapping screw for use with thin gage metal sheets-Parker Kalon Div., General Ameractually terminating in orifice in head itself, to increase resistance to stripping. Screws are available in types A and Z in production quantities. Full thread is said to eliminate "spinning" in light gage metals.

Horizontal Heat Pump

HORIZONTAL HEAT PUMP which can be installed as remote or self-contained unit by separating or coupling sections-Lennox Industries Inc., Dept. AA, 200 S.



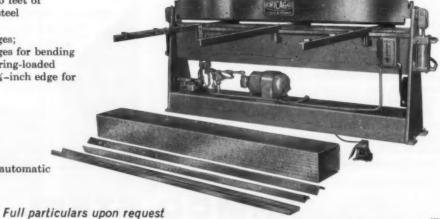
12th Ave., Marshalltown, Ia. Compressor has oversize motor with refrigerant motor cooler; it is said to operate with condensing temperatures up to 145 F and with evaporator temperatures below zero F. Defrosting in compressor section is controlled by thermo-

ican Transportation Corp., Dept. AA, Clifton, N.J. Screw is threaded full to the head with last thread

Production Bending for duct sections and long, light-gauge work

CHICAGO SPEED-BENDER

- · 8 feet of 24-gauge or 5 feet of 20-gauge galvanized steel
- · Adjustable front gauges; disappearing pin gauges for bending from notches; and spring-loaded gauge pins to make 14-inch edge for Pittsburgh lock
- · Hydraulic operation
- · Foot-switch control
- · Can be arranged for automatic cross-breaking





DREIS & KRUMP MANUFACTURING CO.

Press Brakes . Press Brake Dies . Straight-Side-Type Presses . Bending Brakes . Special Metal-Forming Machines

7404 South Loomis Boulevard . Chicago 36, Illinois





*Before you take a spin-check the oil

Stainless Steels lend themselves readily to cold spinning. When you spin Stainless Steel, be especially generous with the lubricant. Use lubricants with sufficient body to withstand the high pressures and temperatures that may develop. Because of Stainless Steel's superior toughness, greater pressure is required than that used for carbon steel. A good spinning tool is made of hardened alloy steel. It should have a large bearing surface to distribute the pressure as widely as possible.

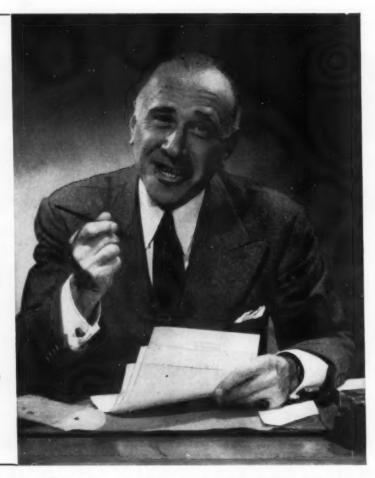
Spinning Stainless Steel will give you accurate and uniform wall thickness in one operation not readily obtainable in drawing. Certain shapes can be spun more economically than drawn, which may require several operations and heat treatment. Remember, too, that certain types of steel are more adaptable to spinning than drawing.

You'll find that Stainless Steel isn't difficult to spin, it's just different. You can do a top-notch job with ease when you follow our 130-page manual. If you haven't received your free copy, write on your company letterhead for our "Stainless Steel Fabrication Book," United States Steel, 525 William Penn Place, Pittsburgh 30, Pa. USS is a registered trademark

United States Steel Corporation - Pittsburgh
American Steel & Wire - Cleveland
National Tube - Pittsburgh
Columbia-Geneva Steel - San Francisco
Tennessee Goal & Iron - Fairfield, Alabama
United States Steel Service Centers
United States Steel Export Company



"I'm the best informed man in the business ...thanks to Dodge Reports"



"I've been in business long enough to think I know everybody around, but I've learned never to be surprised when my Dodge Reports show up good jobs I didn't know about."

Even the best informed old-timer can't match Dodge Reports for knowledge of all that's going on in the construction industry. That's because no successful contractor can spend all his time getting construction news. But Dodge reporters do just that—it's their only job. And every day the news they gather is mailed to contractors who use Dodge Reports. If you want to know what's going to be

built, where it's going to be built, who the owner is, who's designing it and even when the bids are wanted, you can get this information for any area in which you operate within the 37 Eastern States.

This is not a year to gamble on getting your share of business and making a profit. Use Dodge Reports for the assurance of having the business opportunities you need. Send the coupon now for your copy of "Dodge Reports—How to use them effectively," including the famous "Dodge Specification Form" to help you figure out the kind, size, location, etc., of jobs you should go after.

F. W. Dodge Corporation, Construction News Division, Dept. 16078 119 West 40th Street, New York 18, N. Y. I want to know how to get more new construction business. Please let me see some typical Dodge Reports for my area. I am interested in the markets checked below: House Construction	Dodge Reports For Timed Selling to the Construction Industry
Company	For Timed Selling 14 the Construction Industry

(Continued)

stat. Extra coil is provided in indoor section for heating function; during cooling cycle, a portion of indoor coil is automatically cut off to preserve high rate of heat removal. In cold weather, entire face area of indoor section is activated. Coils are copper and have 10 aluminum fins per in. Control center provides choice of manual or automatic regulation, permits running indoor blower continuously or only when compressor is operating, regulates auxiliary strip heater segments which are optional equipment. Units range from 3 to 5 tons nominal cooling capacity and from 12,500 to 21,500 Btuh heating capacity without strip heaters at zero F.

Dimple Slotter

DEEP THROAT dimple slotter for fabricating louvers, turning vanes, air extractors and other sheet metal products in shop or on the job—Airo Industries, Dept. AA, 1712 W. Florence Ave., Los Angeles 47. Portable machine makes dimple \mathcal{T}_8 in. in diameter with slit across bottom in 18 ga and lighter metal, in single operation. Portion of product to be fastened is slid into slit and metal is peened over for rigid connection. Slotter is all steel, weighs about 50 lb, has 6 in. throat. Slit size is adjustable to any width from 1/32 to 1/8

in. Die blade is visible; center spacing gage is adjustable up to 7 in. Punch adaptor is available for



punching 3/32 to $\frac{1}{2}$ in. holes with standard punches and dies.

Air Cooled Units

AIR COOLED residential and commercial air conditioning units rated at up to 254,000 Btuh cooling capacities—American-Standard, American Blower Div., Dept. AA, Detroit 32. Matched performance ratings with oversize condensers provide wide range of sizes. Each base unit is rated not only with condensers of matching size, but also with oversize condensers; result is expansion from 6 to 12 capacities available, with 6 base units. Cabinet has water-shed design; shafts of motor and blower are plastic coated. Centrifugal fan turns at low rpm. Adjustable motor sheave is designed for applications with increased static pressure.

The new A&A "AIR-WASTER" is ideal for home modernization jobs!

The most flexible air register — diffuser to reach the market in years! Only one unit to stock and install for both heating and air conditioning.

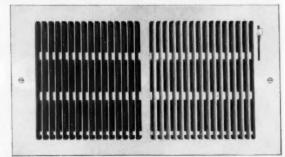
An ideal replacement for registers in older homes where air conditioning systems are being added. Installs on wall or baseboard on inside or outside walls.

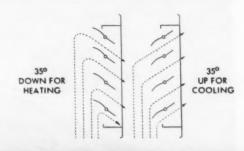
The A&A "AIR-MASTER" diffuses evenly anywhere! Effortless change from summer cooling to winter heating. Air flow is adjustable by lever from 35° up to 35° down. Vertical fins are factory set to diffuse air to both sides 22

degrees, half right and half left . . . and the settings can be changed.

Write for details on the M-series "AIR-MASTER"

We make a complete line of registers, grilles and diffusers for all types of heating and air-conditioning installations. Write today for your copy of our new catalog 58, just off the press.







The A & A REGISTER COMPANY

Oil-Fired Furnace Line

Models OSU 85 horizontal, OHB 85 highboy, OCF 85 counterflow and OFB 85 floor model oil-fired furnaces all rated at 84,000 Btuh output at bonnet—Federal Heating and Cooling Corp., Dept. AA, Charlotte, N.C. Featured are flue outlets on either side, ceramic combustion chambers, large belt-driven winter and summer circulating blower, and cold air return knockouts. Model OFB 85 has gun type burner; 550 cfm twin blowers, extends 317/8 in. below floor, burns no. 2 fuel oil. Other models have 800-1000 cfm blowers with 1/6 hp motors.

Air Conditioning Equipment

MODEL G&S- 3TPC air cooled, 3 ton self-contained air conditioner; model G&S-4T, 4 hp condensing unit; and models G&S-AC75FDF-3 and G&S AC86FDF-3 furnaces in "Gaffers & Sattler" line—Utility Appliance Corp., Dept. AA, 4851 S. Alameda St., Los Angeles 58. Air conditioner consists of 3 hp compressor, four-row condenser coil, large capacity condensing air fan, and evaporator served by twin blowers. Condensing unit has capacities of: 48,000 Btuh with 5TD or 5TS evaporator in connection with three furnace models; 43,000

Btuh with 3 TD or 3 TS evaporator. Furnaces, designed for special area loads, have 75,000 and 86,000 Btu inputs and two-speed, 1/3 or ½ hp motors, which provide 1250 and 1450 cfm to accommodate summer air conditioning in semi-arid regions.

Louvers, Penthouses

LINE OF weathertight extruded aluminum louvers and louver penthouses in standard stationary, "stormproof" stationary and adjustable models—E. Van Noorden Co., Dept. AA, 126 Magazine St., Boston. Units feature vertical gutter with controlled return designed to prevent dripping or penetration of water from outside. "Stormproof" model has baffles at middle and top of blades for added protection against extreme weather conditions. Adjustable type has blades which may be operated by hand quadrant or chains with spring releases. Different finishes and bird or insect screens are available.

Narrow Furnace

"MIGHTY MITE" 58,000 Btu gas-fired furnace which is only 10 in. wide—Holly-General Div., Siegler Corp., Dept. AA, P.O. Box 2098-D, Pasadena, Calif. Requiring 1 ft or less space, unit can be installed in corner or closet in older home where space is at a premium. Unit has automatic wall thermostat, factory wired controls, adjustable speed blower and air filter.



Test Shows Fuel Savings up to 15.38% with New HUMPHREY MD Unit Heater!

Top Mounted Fan Eliminates Overheated Ceilings

Maintains Temperature within 3° from Floor to

18-Foot Ceiling



Engineers taking readings from freehanging thermometers in warehouse, to determine differential
between floor and
ceiling. Readings
were taken at many
places over the entire
floor and ceiling
area, while heating
first with a conventional type unit heater and second with
the new MD unit
heater.

Humphrey engineers made a comparative test of the new MD Unit Heater with top-mounted fan, and a conventional unit heater, both installed in a 50 x 80-foot warehouse as pictured above. Results were astounding!

The MD unit heater maintained a 3-degree temperature differential between the floor and the 18-foot ceiling, as compared with a 17-degree differential when using the conventional heater with horizontal air delivery.

Calculating actual heat loss for the building, Humphrey engineers found that the MD heater produced substantial fuel savings, by saving those 14 degrees of heat wasted at the ceiling level. With a 70-degree rise, the fuel saving was 9.62%. A 60-degree rise produced a saving of 12%. With a 50-degree rise, the MD used 15.38% less fuel!

These tests also prove that the desired indoor temperature in many installations could be maintained with smaller or fewer MD units.

Write for the full story of these tests. Find out about this completely new type gas fired unit heater that can be installed in less than ideal locations and still deliver heat where it is needed, with economies heretofore impossible.

The completely new Humphrey AD automatic gas unit heater, with top-mounted fan, blows straight down through open top heat exchanger. Has new type "free flow" heat exchanger for ultra-quiet operation; new porcelain enameled steel burners; and interchangeable and optional louvers for front, bottom, or side heat discharge. Available in 11 sizes, from 60,000 to 270,000 btu. American Gas Association approved.

Originators of Gas Unit Heaters

GENERAL GAS LIGHT COMPANY

NATIONAL LOCK CONTINUOUS HINGES for all types of heating and air conditioning cabinets...and other metal applications EQUAL WINGS - STAGGERED HOLES UNEQUAL WINGS - PARALLEL HOLES (ON SPECIAL ORDER) SPRING HINGES Available in steel, brass, stainless steel and aluminum, National Lock hinges are offered with equal and unequal wings . . . $\frac{3}{4}$ " to $3\frac{1}{2}$ " widths . . . up to 97" lengths . . . with and without holes. Write for complete information. HANDLES · PULLS · LATCHES CATCHES · HINGES · SCREWS NATIONAL LOCK COMPANY Rockford, Illinois

new literature . . .

Building Insulation

FOUR NEW TYPES of "Alfol" aluminum foil reflective insulation are described in a brochure written for dealer-contractors, architects, builders, and others interested in developments in the insulation field. Data is given on thermal efficiency, uses, and methods of application. Types 44 and 44F are especially designed for ceiling applications; types 22 and 22F feature a polyethylene backing to provide extra vapor resistance. Of particular interest is a tabulation of the comparative efficiency of five insulating materials in order of their decreasing effectiveness based upon a report compiled by the National Bureau of Standards—Reflectal Corp., Dept. AA, 200 S. Michigan Ave., Chicago 4.

Standardized Duct and Fittings

Two 28 PAGE CATALOGS describe standardized duct and fittings for heating and cooling. Part and code numbers, size, shipping weight, packaging and net prices are given for each type of fitting. Described are newly added sizes in 2½, 5 and 10 ft lengths of "Snap-Lock" small round duct as well as new sizes of rectangular duct. Information is also given on universal type plenums, stack and register boots with "Hem-Tru" collars, universal register boxes with hemmed collars, round ceiling diffuser boxes in straight and increaser types, round butterfly "snap-in" type dampers and wye joints. Send request on company letterhead. Specify dealer catalog No. 458-D or jobber catalog No. 458-J—Standard Furnace Supply Co., Ltd., Dept. AA, 714 S. 72nd St., Omaha, Nebr.

Filters

AIR FILTERING PRODUCTS for commercial and industrial applications are described in a four page illustrated brochure. Included are reproductions of eight photographs illustrating standard filters for air conditioning and heating units—Owens-Corning Fiberglas Corp., Dept. AA, National Bank Bldg., Toledo 1, O.

Blowpipe Nozzles

"CUT YOUR FLAME-CUTTING COSTS," describes how quality nozzle construction and proper nozzle selection can reduce gas consumption and nozzle replacement. Ask for Form 1057—Linde Co., Div. of Union Carbide Corp., Dept. AA, 30 E. 42nd St., New York 17.

Duct Silencer

CATALOG covers "Quiet Duct" sound absorbers for air conditioning and ventilating systems. Selection data is included—Industrial Acoustics Co., Dept. AA, 341 Jackson Ave., New York 54.

"fast spot heating"



Norman Three-Sixty®

GAS-FIRED

answer more jobs better!



- Patented Sealed-Combustion System . . . 100% outside air for combustion . . . flue products expelled outside under pressure
- Inputs of 85,000 or 100,000 BTU/hr.
- American Gas Association approved

NOW YOU CAN

IN BOTH THE HORIZONTAL FURNACE AND BLOWER-TYPE UNIT HEATER

MARKETS





Norman Southerner®

NOW MORE COMPETITIVE THAN EVER

The Norman Southerner - today's leading horizontal furnace value -is yours to sell at competitive prices!

Norman Products Company was first to design and produce a compact, gas-fired horizontal furnace. Today the Southerner is the most advanced furnace of its kind . . . time-tested and performance-proved both as a unit heater and a central heating system.

Now Norman gives you the competitive prices that will open the way to greater sales volume . . . greater profit-opportunities.

- Completely assembled for fast, lower-cost installation
- Residential, commercial and industrial applications in new construction and modernization
- Five sizes: 70-85-100-120-140 thousand BTU input
- Approved by A.G.A. for use as either central heating system or as blower-type unit heater with any type of gas. Also approved for attic installations.



Write us today for descriptive literature

NORMAN PRODUCTS CO. 1164 Chesapeake Ave. Columbus, Ohio







PRODUCTS

COMPANY

1164 CHESAPEAKE AVE.

COLUMBUS 12, OHIO

Direct-Fired Heat Diffusers

ILLUSTRATED BOOKLET covers direct-fired heat diffusers installed as central systems for schools, churches, warehouses, factories and other large area buildings. A step-by-step formula for selecting the proper capacity unit is included as well as tables showing ratings and physical data, fan performance and resistances of filters and other accessories. Ask for catalog No. 46 AF 91—Unit Heater Department, Carrier Corp., Dept. AA, 300 S. Geddes St., Syracuse 1, N. Y.

Prefabricated Refractory Smokestack

CIRCULAR describes refractory smokestacks for industrial applications designed to eliminate necessity of frequent replacement. Smokestacks are available in 3 ft sections with inside diameters ranging from 10 to 30 inches. Illustrations show typical applications as well as installation procedures—Van-Packer Co., Div. of the Flintkote Co., Dept. AA, P. O. Box No. 306, Bettendorf, Iowa

Two Furnace Heating System

THE ADVANTAGES of using two furnaces in residential heating applications are described in an eight page of

consumer brochure. The booklet points out that structural design of present day homes — rambling layout, two or more levels, large glass areas — create new problems in heating. It is explained that by using two furnaces the home owner can divide his house into zones, each of which is served by its own heating plant. In addition to providing greater comfort, the company says, a two-furnace system offers the advantages of savings in fuel bills, longer furnace life, and easy addition of summer air conditioning—American-Standard Air Conditioning Div., Dept. AA, 40 W. 40th St., New York 18.

Arc Welding

How to keep electric arc welding circuits operating properly is explained in a 24 page booklet written in non-technical language. Ask for "Reducing Costs by Proper Care of Arc Welding Circuits"—Lenco, Inc., Dept. AA, 350 W. Adams St., Jackson, Mo.

Flexible Shaft Machines

ENLARGED EDITION of industrial catalog No. 58 includes data on flexible shafts and flexible shaft machines. Also described are "Wyco" angle heads, wire brushes, grinding wheels and mounted points—Wyzenbeek & Staff Inc., Dept. AA, 223 N. California Ave., Chicago 12.

In the New York market
...where price is
an important factor ...
and rigid building
codes exist ...
Empire Ventilators
outsell all others.



Empire Ventilation Equipt. Co.

35-39 Vernon Boulevard Long Island City 6, N. Y. PARKER-KALON DIVISION, General American Transportation Corporation, Clifton, New Jersey

For the first time in fastener history—Parker-Kalon introduces Self-tapping screws threaded full to the head ... the last thread actually terminating in an annular orifice in the head itself . . . the new P-K "Hi-thred" fastener!

It's a completely new idea in fasteners—a screw that reduces annoying and costly slow-downs—holds securely without spinning or slipping—even in very thin gage metal sheets.

PARKER-KALON

Self-tapping Screws



Compare the new P-K® "Hithred" with any conventional fastener. See for yourself the incomplete last thread on ordinary screws. Then see how the revolutionary P-K "Hi-thred" is constructed to give you firm, dependable fastening right to the head of the screw.

You can obtain samples from your nearby Industrial Supply Distributor, or write direct to P-K. "Hi-thred" fasteners are available in Types "A" and "Z" in production quantities in non-countersunk head styles.

Look...it's threaded right into the head!



LARGE OR SMALL

O-BLAST

SAVE MONEY

THE ECONOMITE FOR RESIDENTIAL INSTALLATIONS

Capacities from 75,000 to 700,000 BTU/hr. input.





THE STANDARD Lo-BLAST

Capacities from 100,000 to 20,000,000 BTU/hr. input.

THE DUAL FUEL Lo-BLAST

The finest gas burner...the finest oil burner now combined in one great unit.

Capacities from 600,000 to 2,500,000 BTU/hr. input.



AVERAGE 10% LESS IN OPERATING COST

Lo-BLAST Power Gas Burners save money because they eliminate the fuel waste caused by uncontrolled draft.

When a power type burner shuts off, there is no rush of draft air to carry heat up the chimney, a condition which would cause a serious fuel waste. The Lo-BLAST Burner does not depend upon natural draft, but upon air sup plied by a small quiet blower. It provides combustion air only when the burner is on! When the burner shuts off, the flow of air shuts off. The heating plant thus retains much of its heat between operations.

That's why Lo-BLAST Burners cost substantially less to operate.

SEND TODAY FOR COMPLETE INFORMATION

MID-CONTINENT

METAL PRODUCTS CO. 1960 N. Clybourn Ave., Chicago 14, Ill.

new literature

(Continued)

Direct Fired Unit Heaters

ILLUSTRATED DATA SHEET includes information on horizontal discharge gas fired unit heaters—Young Radiator Co., Dept. AA, Racine, Wis.

Blowers for Residential Applications

DATA ON "VARI-BASIC" BLOWER UNITS designed for use in residential air conditioning and warm air heating equipment is given in a four page technical bulletin. Units are equipped with Type CJ spider-inlet wheels. Specifications are given for four sizes in each of four discharge positions — top horizontal, bottom horizontal, upward and downward. A set of performance curves for each size gives static pressure and brake hp as functions of flow rate output at four motor speeds—Air Impeller Div., Dept. AA, The Torrington Mfg. Co., Torrington, Conn.

Gas Vents, Prefabricated Chimneys

BROCHURE ON VENTING titled "Modern Heating Demands Modern Venting" details the functions of Type B gas vents and factory built chimneys. The brochure points out that use of the vent or chimney increases efficiency of gas heating, also cuts the cost of heating installations—Gas Appliance Manufacturers Association, Dept. AA, 60 E. 42nd St., New York 17.

Gas-Fired Winter Air Conditioners

"COMET-572" factory wired and assembled gas-fired winter air conditioners are described in a three color data sheet punched for catalog insertion. Keyed photographs show components. Line drawings and tables give dimensional information, engineering data and capacities—Thatcher Furnace Co., Dept. AA, Centre St., Garwood, N. J.

Insulation Stapler

CATALOG contains information on "L3-CS" outward clinch staple tacker for fastening insulation to heating and air conditioning ducts. Illustrations include both product and application photographs—Markwell M/g. Co., Inc., Dept. AA, 200 Hudson St., New York 13.

Ventilating Fans

BULLETIN UVS-104 covers belt-driven ventilating units with either forward curve wheels or backward blade non-overloading wheels. Included are performance tables, engineering data, selection and installation information and specifications on 12 basic size package ventilating fans—General Blower Co., Dept. AA, Morton Grove, Ill.

AIR CONDITIONING IS PROFITABLE BUSINESS!



• A carefully worked out selling plan has helped this business grow. Mr. Jordan is shown with sales literature and the Du Pont survey on which his sales plans are based.

"Planned selling helped our air conditioning business grow more than 400% in three years"

Reports Mr. Culver Jordan, President, Culver Jordan, Inc., Heating and Air Conditioning Contractors of Macon, Ga.



• After 25 years in sheet-metal work, Mr. Jordan's business showed tremendous expansion after he took on air conditioning in 1953. Here he is shown inspecting a residential installation in Macon, Ga. Mr. Jordan handles Carrier equipment exclusively and uses "Freon" refrigerants to help assure trouble-free performance.

"With intelligent advertising, an enthusiastic sales force and trained technicians to do a topnotch job, air conditioning has become our fastest-growing source of income," says Mr. Jordan. "We've doubled and redoubled our sales in the last three years and we're looking for a quarter of a million dollars' worth of new business in 1958. With the help of Du Pont's market research on central residential air conditioning, we're sure we'll meet this goal . . . despite talk of a recession.

"We believe in selling a quality job, so we're happy with Carrier equipment which uses Freon* refrigerants," continues Mr. Jordan. "With 'Freon' we know we've got the world's best refrigerant."

Air conditioning is profitable business—especially when you know who the best prospects are . . . where they are located . . .

and how to reach them. Thanks to Du Pont market research, this information is available to you free—plus a wealth of technical information on the use, storing and handling of "Freon" refrigerants. For more information, contact your complete air conditioning and refrigeration wholesaler or write: E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Division 177, Wilmington 98, Delaware.

Always ask for "Freon" from the wholesalar who displays this sign . . .



FREON

SALES AGENTS: Ansul Chemical Co., Marinette, Wisconsin and Virginia Smelting Co., West Norfolk, Virginia

REFRIGERANTS

*Freen and combinations of Freen- and F- followed by numerals are Du Pont's registered trademarks for its fluorinated bydrocarbon refrigerants.



BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY

(Continued)

Hand Tools

FIFTIETH ANNIVERSARY CATALOG No. W-22 illustrates several pliers recently added to the company's line. Also offered is catalog No. HL112 illustrating 12 in. "Super Groove-Joint" six-position tongue and groove plier with parallel jaws opening to 2-½ inches. Other models are offered in 4, 6 and 10 in. sizes. Catalog No. DN56 covers 6 in. short nose duck bill plier available with or without scoring on the tips—Diamond Tool and Horseshoe Co., Dept. AA, 4702 Grand, Duluth, Minn.

Oil Heat Servicing

OHI-4853 consumer promotional folder (four pages) promotes annual check-up of oil heating plants, stresses the importance of periodic adjustment and maintenance of oil heating equipment—Oil-Heat Institute of America, Inc., Dept. AA, 500 Fifth Ave., New York 36.

Angle-Iron Shear

Hydraulic angle-iron shear designed to shear angle iron up to $4 \times 4 \times 1/4$ in. is described in a two page, illustrated circular. Only 26 in. high, shear is said to

have an 18 ton capacity. It may be used on floor or bench. Also described is No. 95 hydraulic punch press available in both bench and cabinet models—W. A. Whitney Mfg. Co., Dept. AA, 636 Race St., Rockford, Ill.

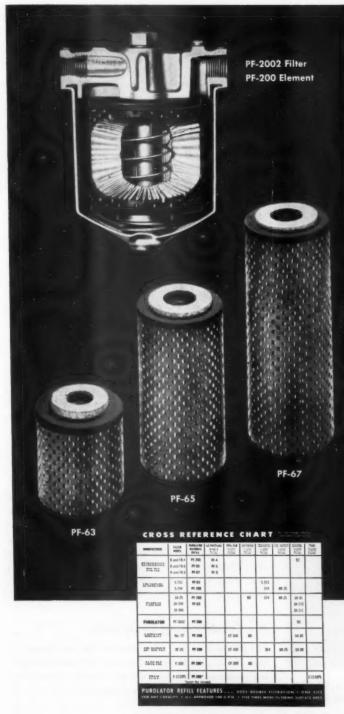
Dust Control

BULLETIN 270-A2 describes the operation and application of dust control equipment. Installation photographs illustrate how different combinations of dust control units can meet specific job requirements. Basic units featured are "AAF Skimmer" and "AMERclone" dry centrifugal collectors and "Type N Roto-Clone" wet type collector—American Air Filter Co., Inc., Dept. PD-AA, 215 Central Ave., Louisville 8, Ky.

Air Diffusers

The features of "TMD" square and rectangular air diffusers are presented in a 20 page illustrated catalog designated TMD-6-58. Two basic types — one-piece and removable core models — are available in various sizes and patterns. Photographs illustrate units for standard and drop frame installations as well as models designed for applications requiring surface mounting. Engineering and performance data is included to facilitate selection—Titus Mfg. Corp., Dept. AA, Box 810, Highway 20 West, Waterloo, Iowa.





This handy guide shows you, instantly, the filter refills which may be used, interchangeably, in all leading filter units.

Filtration For Every Known Fluid

PUR OLATOR

PRODUCTS, INC.

Rahway, New Jersey and Toronto, Ontario, Canada

Reduce your inventory problems...

THESE 4 PUROLATOR REFILLS SERVICE 98% OF ALL OIL BURNER FILTER INSTALLATIONS

With the addition of three new sizes, the famous PurOlator line of Micronic® filter refills (including gaskets) will now fit 98% of all oil burner installations.

In addition to supplying most requests from a minimum stock of four sizes, you can give your customers the five outstanding benefits of PurOlator Micronic filtration—no matter what filter is installed on their job.

- 1. Water and acid resistant element.
- 2. Uniform density filtering to .0005".
- 3. No channeling or "soft" spots.
- 4. Will not shrink, distort, stretch, flake or deteriorate.
- A guaranteed filtering capacity of over 100 gallons per hour U.L. approved.

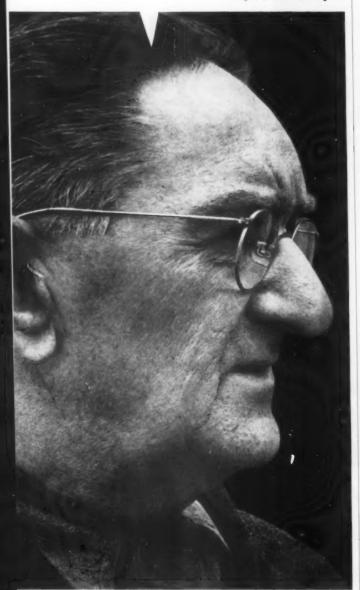
	-MAIL	COUPON	FOR	FREE	CROSS-REFERENCE	CHART
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Dept. OB5-730 Purolate Rahway, New Jersey	r Products	Co., I	nc.	
Please send me c Element Cross-Reference Ct		r Oil	Burner	Filter
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Address				
City	Zone	Sto	nte	

"Best Iron? Inland TI-CO

...it hammers flat and stays flat!"

says Ernie Kolpin



"There are no razor blades or clock springs in TI-CO. It's hard enough to take rough treatment but soft enough to hammer down quickly and stay down!"



-Ernie Kolpin, Shop Foreman, BUDD the Furnace Man & Sons Hammond, Indiana

Ask your distributor for the TI-CO Brand . . . the galvanized sheet tailor-made for sheet metal work . . .

Year 'Round Air Conditioning

CATALOG contains information on "Climate Changer" central system residential equipment for heating, summer air conditioning, or year 'round conditioning. Included are illustrations, product descriptions, selection information, engineering details, dimensions and mechanical specifications. Furnace input ratings listed range from 77,000 to 154,000 Btuh. Ask for residential catalog DS-363—The Trane Co., Dept. AA, LaCrosse, Wis.

Stitching Machine

"METAL STITCHING, a New Idea in Fastening" (16 pages) gives information on stitching metal to metal or metal to non-metallic materials. Photographs show typical applications including attaching insulation to duct sections, fastening sheet metal seams on register heads, etc.—Acme Steel Co., Dept. AA, 135th St. and Perry Ave., Chicago 27.

Oil and Gas Furnaces

ILLUSTRATED FOUR COLOR LITERATURE covers oil-and gas-fired warm air heating equipment. Specifications are given for highboy, lowboy, counterflow, horizontal, and floor furnaces—Thermo-Products, Inc., Dept. AA, North Judson, Ind.

Mechanical Draft Fans

CATALOG 1321 entitled "Mechanical Draft Fans" contains information on airfoil bladed fans with inlet boxes for industrial process supply and exhaust applications. Fans are available in volumes ranging from 10,000 to 700,000 cfm, in pressures up to 45 inches. Installation photographs and general engineering data are included—Westinghouse Electric Corp., Sturtevant Div., Dept. G-406 AA, 200 Readville St., Hyde Park, Boston 36.

Air Conditioning Equipment

BULLETINS 133, 137 and 138 describe the company's type "C" air conditioners (coil surface type), refrigerant condensers and fan coolers—Niagara Blower Co., Dept. AA, 405 Lexington Ave., New York 17.

Duct Insulation Adhesive

CIRCULAR describes 1A-22 adhesive designed to provide quick, strong bond of insulation to metal or insulation to insulation (at joints). According to the company, tack time is only 10 seconds. Adhesive may be applied with either brush or roller—Duro-Dyne Corp., Dept. AA, Route 110, Farmingdale, N.Y.

INLAND STEEL COMPANY

we hear that . . .



CORRECT TOOLS for installing oil burner nozzle are demonstrated by Ralph L. Dennis (center) to (1 to r) I. M. Nelson, Lars Schulein, Charles Atkins and J. C. Sloan

▶ L. E. SCHULEIN Co., Chicago area representative for Boston Machine Works Co., Peerless Electric Co., and General Filters, Inc., recently sponsored a three day oil burner school.

Subjects covered included "Good Profits in Modernization," "Burning Oil Completely," and "Draft Control Is Important." Sixty-five dealer-contractors, service managers and wholesalers' salesmen attended the school, with one dealer-contractor coming from as far away as Lansing, Mich.

Classes began at 8:30 in the morning and ended at 5:30 in the evening, with lunch being served on the premises by a catering service company. Classes were conducted by Ralph L. Dennis and I. M. Nelson of the Boston Machine Works Co.

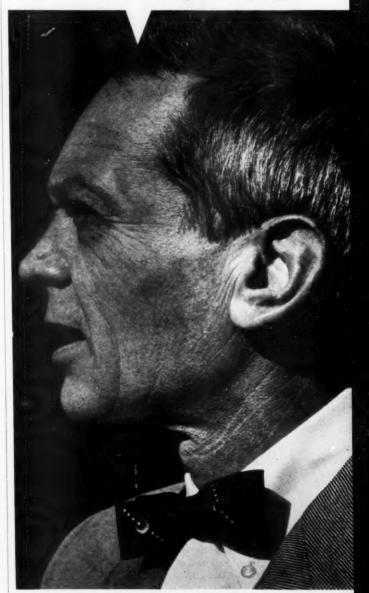
Class participation was the key method of instruction, each student having the opportunity to adjust and handle the various equipment covered in classroom discussions. The students were asked to set up various conditions and were then asked to make the necessary adjustments to correct such conditions. Notations were made of CO₂ readings, stack temperatures and smoke ratings before and after adjustments to bring out the effectiveness of proper diagnosis of malfunctions.

In pointing out the importance of proper combustion, Mr. Dennis demonstrated how the correct angle and spray rate of nozzles are related to many of the problems encountered in complete burning of oil in a combustion chamber. He listed combustion chamber shape, area and height as well as chimney capacity as important factors to consider in selecting oil burner nozzles.

▶ WESTINGHOUSE ELECTRIC CORP. employees had proportionately fewer accidents at work last year than in any other year in company history, according to R. D. Blasier, vice president in charge of industrial relations. Four divisions received the award of honor of the National Safety Council.

"TI-CO's coating stays put too ...it rolls with the punch!"

says Bert Leininger



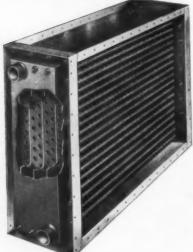
"You don't have to worry about flaking with TI-CO. Even on the lock-seamer TI-CO's zinc coating flows with the base metal... never fractures."



-Bert Leininger, President, Winnetka Heating & Air Conditioning Corp. Wilmette, Illinois

Ask your distributor for the TI-CO Brand . . . the galvanized sheet tailor-made for sheet metal work . . .

INLAND STEEL COMPANY



AE DFIN TYPE REMOVABLE HEADER WATER COILS

- Complete Drainability
- · Easily Cleaned
- High Heat Transfer

Completely drainable and easily cleaned, Aerofin Type "R" coils are specially designed for installations where frequent mechanical cleaning of the inside of the tubes is required.

The use of %" O.D. tubes permits the coil to drain completely through the water and drain connections and, in installations where sediment is a problem, the coil can be pitched in either direction. The simple removal of a single gasketed plate at each end of the coil exposes every tube, and makes thorough cleaning possible from either end.

The finned tubes are staggered in the direction of air flow, resulting in maximum heat transfer. Casings are standardized for easy installation. Write for Bulletin No. R-50,

AEROFIN CORPORATION

101 Greenway Ave., Syracuse 3, N.Y.

Aerofin is sold only by manufacturers of fan system apparatus. List on request.



M. H. THOMAS (right) receives certificate from H. P. Mueller Sr., president of Mueller Climatrol, in recognition of outstanding sales achievement

MUELLER CLIMATROL has named M. H. Thomas regional manager of the year. Territory served by Mr. Thomas comprises Ohio, Indiana, Michigan, Kentucky and West Virginia.

Long-time salesman E. H. Saunders, Detroit, recently received a gold watch from the company in recognition of his 30 years of continuous service. Frank J. Nunlist, former executive vice president, made the presentation during ceremonies held at the firm's executive offices in Milwaukee.

- ▶ THE W. A. WHITNEY MFG. Co. now handles distribution of the entire line of "Estwing" hammers and axes, including tinners' riveting and setting hammers, curved claw and straight claw hammers, and engineers' and machinists' hammers.
- THE INTERNATIONAL NICKEL Co. has begun construction of a new addition to its Huntington, W. Va. works. The new building will house additional seamless tubing and other cold draw equipment and facilities, will increase existing cold drawing production capacity by about 50 percent according to E. M. Kline, general manager of the Huntington plant.
- THE STEEL CITY FURNACE CORP., founded 14 years ago in Springdale, Pa., recently expanded its manufacturing space with a new 18,000 sq ft building to accommodate the demand for its gas-and oil-fired furnaces. The company now has more than 45,000 sq ft of production area. Ever since Steel City was founded, according to Thomas O'Shaughnessy Sr., the firm's president, it has been provided with technical assistance in the selection of the proper type of steel for its furnaces by Jones & Laughlin Steel Corp. Jones & Laughlin also supplies the recommended types of steel—12 and 14 gage hot rolled sheets for heat exchanger assemblies and 20 and 22 gage rolled sheets for cabinets,



TRION, INC.'s "Clean Air Laboratory" is scheduled to visit all major cities in the United States

- TRION, INC. has designed a mobile laboratory for the testing of air filtering equipment. Main feature of the traveling laboratory is air testing equipment which duplicates that used by the National Bureau of Standards. Air filtering demonstrations will be given to groups of dealer-contractors, air conditioning engineers, architects, engineering students and others interested in solving air cleaning problems. One piece of equipment of particular interest is the American Iron and Steel Institute's automatic smoke sampler which is designed to sample city atmosphere automatically for determination of smoke and haze concentration. Charts on all cities visited will be available for comparative purposes, the company says. The testing equipment is portable and may be taken from the laboratory into industrial plants for demonstrations and tests under actual operating conditions where a particular air cleaning problem exists.
- Southern Screw Co., Statesville, N.C., producers of sheet metal screws, tapping, drive and machine screws, is now shipping bulk fasteners on standardized 30 × 30 in. disposable, two-way entry pallets. The new packing is designed to facilitate handling and storage. Individual units can be easily moved or stacked by one man, the company says, or may be moved as received on the 36-unit pallet by mechanical or power equipment. Storage requires a minimum of floor space as both pallets and individual packages are designed for stacking. A chart showing packing quantities of various types of screws in cartons and on pallets is available from the company.
- ▶ CHAMPION FURNACE PIPE Co. of Peoria, Ill., has recently moved to 120 Morton St. The move not only provides larger office space but doubles the ware-housing space—made necessary by expanded operations.
- A NEW MERCHANDISING PROGRAM on "General 800" humidifiers has been announced by General Filters, Inc. Dealers mailing humidifier warranty cards to the company will receive a free humidifier for every 12 cards sent in before July 31,



- ▶ JOHN M. KANE, manager of American Air Filter Co.'s dust control products department, has been elected a director of the American Industrial Hygiene Association. AIHA is a national organization of plant engineers, industrial hygienists, governmental health and labor officials who are interested in improving industrial environments. Mr. Kane is known to readers of American Artisan as the author of the articles "Selecting Dust Control Equipment" and "How to Evaluate Collectors for Dust Control Jobs."
- ▶ Plans to enter the aluminum coated steel sheet market have been announced by Richard F. Sentner, U. S. Steel Corp.'s executive vice president, commercial, Commercial production will follow a facility modification program at the company's Irvin Works near Dravosburg, Pa.
- THE MILLER ELECTRIC MFG. Co., INC., reports that the arc welder used to seal the skin of this country's first satellite, Explorer I, is a Miller model SRTA-2AP machine built in Appleton.
- The Metalbestos Div., William Wallace Co., has produced a color slide film titled "Heat in Harness: The Story of Gas Venting." Available for showings to

- heating dealer-contractors, distributors, utilities, code authorities and other groups, the film explains how correct gas venting utilizes "waste heat" to remove harmful wastes. Total running time is 27 minutes.
- ▶ WEBSTER ELECTRIC Co.'s heating division held its annual sales meeting recently in Racine, Wis. William J. Wenszell, the division's new sales manager, told the representatives that "sales prospects for 1958 look good. We fully expect more than a half million gun type oil burners to be manufactured this year. It's our job to see that Webster components are in as many of them as possible."
- LEIGH METAL PRODUCTS LTD., 72 York St., London, Ont., Canada, plans to begin producing Air Control registers, grilles and diffusers in the near future. The company has already started to manufacture Leigh building products. Distribution of both the Air Control and Leigh lines will be made throughout Canada.
- ▶ CHARLES E. SMITH, former assistant national service director, has been appointed national service director of Robertshaw-Fulton Controls Co. Mr. Smith will be in charge of the company's traveling training schools for instructing dealer-contractor service personnel in new installation, maintenance and repair techniques.

Cincinnati Elbows really get around To "cut corners" on tricky installations, specify Cincinnati Elbows, for quick, trouble-free connections. Shaped and tapered on fully automatic machinery, Cincinnati Elbows fit together perfectly, even on complicated jobs. Once installed, they look better and last longer, for they're hot-dipped after formation to give you a smooth, rust-resistant finish. So, next time specify Cincinnati Elbows. There's a wide choice of sizes, angles and gauges in copper, aluminum, stainless or galvanized steel. For positive uniformity ask for Cincinnati Elbows. CINCINNATI ELBO 4730 Madison Road . Cincinnati 27, Ohio

wholesaler doings...



RAY KENDALL, Rheem Home Products Div., shows Bud Beberich and Al Wagner of B & E Heating, Downers Grove, Ill., how to check out an air conditioning installation

- ▶ ACME FURNACE FITTINGS Co., Chicago, recently sponsored a "Rheemaire" service and installation school for service personnel of its dealer-contractor organization. Ray Kendall of the Rheem Home Products Div. used a demonstrator unit to show servicemen how a "Rheemaire" system works and how to correct malfunctions that can occur.
- ▶ Allison-Erwin Co., Charlotte, N. C. will handle distribution of Fedders-Quigan air conditioners and dehumidifiers in the state of South Carolina and part of North Carolina. Allison-Erwin maintains warehouse branches in Charleston, Greenville and Columbia, S. C. and in Asheville. N. C.
- DURING THE MONTH OF MAY, the Harry Alter Co., Inc., Chicago wholesaler, published a series of ads in Sunday and daily newspapers urging home owners to get their air conditioning equipment serviced or installed before the hot weather rush. The ads suggested consulting the yellow pages of the phone book for the names of neighborhood dealer-contractors. The Alter company does no service or installation work itself; it ran the advertisements in an effort to stimulate preseason activity for its trade accounts. Commenting on the program, Harry Alter said: "Everyone in air conditioning must continue to inform the public that better workmanship and lower prices are obtainable before the hot weather comes. We suggested to all of our air conditioning customers that they, too, should build their promotional efforts around this theme."
- ▶ James Martin Co., 405 S. 60th St., Philadelphia distributor, will represent Autoflo Corp. in eastern Pennsylvania, southern New Jersey and the state of Delaware. Principals of the Martin firm are Leonard Woldoff, Martin Lipton and Lee Ruttenberg.
- ▶ CENTRAL DISTRIBUTING Co., San Antonio, Texas has been named a distributor of Waste King incinerators in the San Antonio trade area.

The BIG NEWS is

COLUMBIA'S

GEM Gas Fired Furnaces

HIGHBOY LOWBOY and COUNTERFLOW

With 10 Year Warranty sectional heat exchangers . . . front position built-in draft diverters . . . long life slotted cast iron burners. Blower readily accessible on track for easy servicing.

Heavy gauge steel cabinets flush on all sides with front accessibility, are finished in lustrous baked gray enamel.

HIGHBOY and LOWBOY in 5 sizes; 70M, 100M, 135M, 165M, 200M, Btu inputs. COUNTERFLOW in 3 sizes; 70M, 105M, 135M, Btu inputs.

AGA and UL approved

Write for literature and price list

THE COLUMBIA BURNER CO.
729 Ewing Street Toledo 7, Ohio

ALUMINUM TURBINE VENTILATORS



FIRST to offer Aluminum Turbine Ventilators at the same price as galvanized steel units. Rubber cushioned rotor suspension for quiet, vibration-free operation. Low head inertia and lifetime lubricated deep groove ball bearings assure positive exhaust under all conditions. All-aluminum—no maintenance. Also available in galvanized steel at same price.

LESLIE ... LEADERS IN VENTILATION SINCE 1939





LESLIE WELDING CO., INC.

appointments . . .

▶ RALPH ERLANSON as sales manager for the Stor-Heat Div. of the A. M. Hexdall Co. Mr. Erlanson was formerly with the Weather-Seal Co. of Illinois.







Fred Mulcahy

- ▶ Fred Mulcahy as sales manager of Delavan Mfg. Co.'s Heating Div. He was previously assistant sales manager for oil heating products.
- RAY WHITEHEAD as district manager in charge of the eastern seaboard for Copeland Refrigeration Corp. Mr. Whitehead was formerly associated with Carrier Corp. and with F. H. Langsenkamp Co. He will have headquarters in Syracuse, N. Y.
- ▶ RAY BRILLHART as head of the new Chicago district sales office for General Products Co., Inc. Mr.

Brillhart will be in charge of all sales in Illinois and Indiana, and will also supervise the activities of manufacturers' representatives in Wisconsin, Michigan, Ohio, Kentucky and West Virginia.

- ▶ WOODFORD D. MILLER, a vice president of Robertshaw-Fulton Controls Co., as general manager of the company's Fulton Sylphon Div. Mr. Miller, a director of the company, was formerly attached to the firm's headquarters at Richmond, Va. He replaces vice president Freeman G. Cross, who will continue to supervise marketing and product development for the division.
- WILLIAM H. NEEKAMP as general sales manager for Universal Diffuser Corp. Mr. Neekamp was formerly a regional sales manager for Anemostat Corp.
- ▶ JACK SEARLS as general sales manager of the Betz Div. of Bohn Aluminum & Brass Corp. Mr. Searls will have headquarters at Danville, Ill.
- ▶ WAYNE F. KOPPES, an architect and specialist on curtain wall design, as a consultant on the staff of Washington Steel Corp. Mr. Koppes' services will be available to stainless steel fabricators as well as architects and designers who are using or are planning to use stainless steel for architectural purposes.
- ▶ Blaz A. Lucas Jr. as manager of sales for the Ingersoll Products Div. of Borg-Warner Corp. Mr. Lucas





GEM Combustion Chambers are engineered refractories built for performance and designed for easy, fast installation . . . highest combustion efficiency for high or low-pressure burners.

ENGINEERED TO YOUR REQUIREMENTS

. . . GEM engineers are at your service for special designs . developing new units or redesigning to reduce assembly costs. Send us your prints.



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UNITS

Low-Cost, Trouble-Free **HEALTH-AIRE FURNACES**

Full Line of Gas or Oil-Fired Warm Air Units

- ★ 10 year Warranty with Heat Exchanger-"Heart of the Furnace"
- Nationally known and approved Fully insulated for minimum fuel
- consumption "Whisper-Quiet" blower for abun-
- dant air circulation
- Burner and controls mounted and fully wired
- Complete Package ready for installation

Firewel's liberal PROFIT-MAKER PLAN means satisfaction for customers, profits for Dealers. Modern production line methods and engineering know-how enables you to buy for less and sell competitively. Write for details, choice territories available.



BLOWER-

UNITS

LO-BOY HI-BOY

FINGER-TIP SELLING DATA AVAILABLE

To help promote sales, Firewel has created colorful catalog literature, envelope stuffers, newspaper ads and decals. Sample Kit on request.



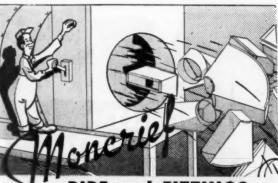
The Firewel Company, Inc.

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You pay less and get more features with speedy E-Z-ON damper regulators, because they're design engineered to do a better job . . . quicker.

Here's Proof: • Lower Price... Means Lower Cost to You Double Prongs Mean Double-Grip... No chance of swiveling
 Washer is Permanently Attached... No loose washer to drop or fall in pipe
 Modern "Swept" Wing Nut is Eye-appealing ... Adds new beauty to installations . Balanced Construction . . . Prevents possible binding of damper in duct.



PE and FITTINGS

Prompt Deliveries

MONCRIEF offers a complete line of Prefabricated pipe and fittings for any type of Heating or Cooling system. All precision made, at low mass production cost. Prompt shipment from Atlanta Factory makes MONCRIEF the South's most dependable source of supply on Duct Work, Registers, Grilles and Diffusers. Save time and money by ordering from your jobber TODAY. Write for catalogue showing fittings and prices.

MONCRIEF FURNACE CO.

P. O. Box 1673

Atlanta, Ga.

Make any cut—curved, straight or ir-regular, faster, easier and better with less material waste on a Beverly Throatless Shear. You can turn work to any position and make a clean cut as you go. Handles heavy gauges with ease—lighter metals without distortion. 4 models—capacities 18 gauge to 3/16" mild.





INSIDE SLOTTER

8" Reach—16 ga. capacity

Makes inside slotting cut-

Makes inside slotting cutting faster, easier, cleaner. Punch and die arrangement of 5 blades assures accuracy, clean cutting action. Cuts 2½ x ½ or 2½ x ½ ½ at one stroke. Throat design permits pivoting work at any point in stroke for special inside cuts. Note sample cuts at left.

See your Beverly Dealer or write for illustrated catalog.

Beverly SHEAR MFG. CO. 3020 W. 111TH STREET . CHICAGO 43, ILLINOIS



Smith's 180° Universal Brake is the answer to the need for one low cost tool that can handle a wide variety of bending and forming jobs with speed and accuracy. Designed to permit selective bending of portions of a workpiece without restriction, the Universal Brake's application and use is literally unlimited. It will handle 18 gauge mild steel 26° wide to 7 gauge 1¼° wide, at any angle, up to 180° in one operation. It has adjustable angle stops and back gauges to assure precise duplication of work pieces, making it a very valuable production tool. Write for illustrated circular and more details.

R. E. SMITH

1124 ELIZABETH AVENUE

appointments

(Continued)

has been associated with the division since 1956, serving first as director of procurement and later as factory manager. He succeeds Robert A. Anderson, who is retiring as vice president, sales, after more than 25 years of service,





W. Donald Brader

John W. Hall

- ▶ W. Donald Braden as manager of packet sales and builder promotion for the Heating & Air Conditioning Div. of National-U. S. Radiator Corp. In his new capacity, Mr. Braden will supervise the promotion of all residential packaged heating units, with special emphasis on the new home market. John W. Hall has been named manager of field promotion for the division. Mr. Hall formerly managed the company's advertising programs and has held positions in the engineering and research departments.
- DONALD H. Ninow as manager of the Moline, Ill., branch office of American Air Filter Co., Inc., succeeding Frank Tyler, who recently retired. Mr. Ninow has been with the firm since 1948.





Donald H. Ninow

Ernest M. Webb

- ERNEST M. WEBB as a sales engineer for the Dura-Vent Corp., an affiliate of Peerless Mfg. Div. of Dover Corp. Mr. Webb has been active in the wholesale heating and air conditioning field for the past nine years.
- ROBERT J. ROSE as district sales manager in central Illinois for the Heating and Air Conditioning Div. of Stewart-Warner Corp. Mr. Rose has been with the division since 1952, serving as a field engineer.
- ▶ CRAWFORD ROBERTSON as eastern division sales manager for Continental Air Filters, Inc. Mr. Robertson will have headquarters in New York City.



Bond Insulation PERMANENTLY with



ST. CLAIR

Specially Formulated Insulation Adhesives

ST. CLAIR Insulation Adhesives provide excellent coverage, high heat resistance and easier handling of insulation which can be bonded im-mediately or up to 45 minutes after applying adhesive.

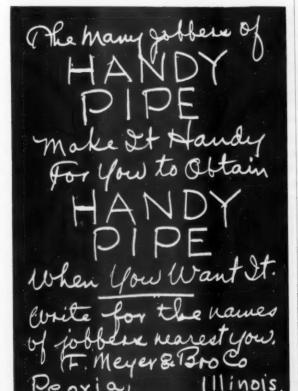
These insulation adhesives afford fine results for bonding insulation to ducts. They supersede pins and clips, wires, screws, and caps, because they save on installation cost while providing a better, neater and more permanent bond.

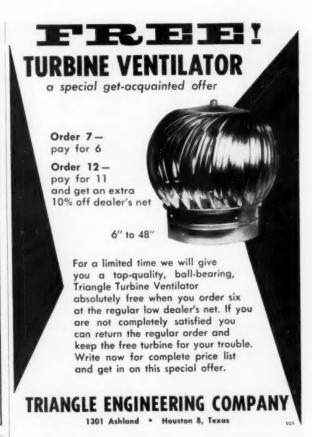
ST. CLAIR also produces clear and white adhesives for bonding lap seams on pipe insulation—also other adhesives for applying foil and vinyl facings to glass fibre.

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Free Catalog

ST. CLAIR RUBBER CO. 440 E. JEFFERSON AVE. - DETROIT 26. MICHIGAN







If it's true that one good job sells another, then Reznor gas heating equipment should be a real business-builder. Reznor makes the finest unit heaters you can install . . . tops in quality and consistently ahead in engineering. Reliable, efficient Reznor installations make friends for you . . . and word gets around. Reznor reliability also means that you don't have to worry about service call-backs eating away

RELIABILITY - just one of the many reasons why Reznor dealers make more sales . . . and more money. Ask your Reznor distributor for the complete story.







Lyle L. Groff

Roger L. Wharton

- LYLE L. GROFF as a regional manager and Roger L. Wharton as a factory representative for the Waterman-Waterbury Co. Mr. Groff will cover the Ohio and western Pennsylvania area; Mr. Wharton will service New England.
- ALVIN H. BARROWS as manager of sales in Indianapolis for United States Steel Corp. Mr. Barrows, who has been assistant manager of sales in Philadelphia, succeeds the late J. Gardner Brooks. He has been with the company since 1946.
- H. J. ROURKE as New York branch manager of commodity products for Inland Steel Products Co. He will direct sales of "Milcor" rain carrying equipment, furnace duct and fittings. He was formerly a New

- York sales representative. R. C. Findlay has been appointed regional manager of sales for engineered products. He will supervise sales of steel roof deck and insulated wall panels in the New York region, which includes metropolitan New York and the New England states.
- FRANCIS L. EARLY as a regional sales manager for Temco, Inc. Mr. Early will make his headquarters in Grapevine, Tex., a suburb of Dallas. He was formerly associated with the Gibson Refrigerator Co., Bryant Mfg. Co. and Servel.
- R. M. Toucey as manufacturer's representative in the Pittsburgh area for Trion, Inc. He was formerly a representative for the Trane Co.
- JAN GUNN AND EDWARD J. PEGELOW of Gunn & Pegelow, Chicago, as manufacturer's representatives in Illinois and northern Indiana for Nu-Way Corp, Frank N. Moran, Grosse Pointe, Mich., will represent the firm in Michigan and northwest Ohio, and John A. Sandberg, Minneapolis, will cover Minnesota, Wisconsin and the Dakotas. Now in charge of the eastern territory is the company's vice president, Arthur E. Olson, whose headquarters are in Westport, Conn.
- LOUIS MARTIN & ASSOCIATES, Columbus, O., as package chimney representative for McQuay Chim-

SHEET METAL SUPPLY,

SEAMLESS, LONG-LENGTH GUTTER - TO YOUR SPECIFIED LENGTH UP TO 32 FEET

WITH 3 INCH SQUARE CORRUGATED CONDUCTOR PIPE AND "A" OR "B" ELBOWS

(UNION MADE BY AF of L SHEET METAL WORKERS)

WE WILL SEND FULL INFORMATION AND PRICES ON YOUR REQUEST

FURNACE PIPE AND FITTINGS

5 INCH, 6 INCH, 7 INCH SNAP-LOCK ROUND PIPE 5 FOOT AND

2 FOOT LENGTHS, WITH ELBOWS AND BOOTS

SKyline 2-0660

SOME PROTECTED TERRITORIES AVAIL-ABLE TO MANUFACTURERS REPRESENTATIVES

CLEVELAND, OHIO

16722 MILES AVENUE

PERFORATED METALS

for all industrial uses

ARCHITECTURAL GRILLES

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Sales Agents in all principal cities Consult your Classified Telephone Directory

Quick **Delivery** to South & West ADD-ON COILS



Stock Sizes 2, 3, 5, & 7.5 Ton

> **Magic Aire Division** UNITED ELECTRIC CO.

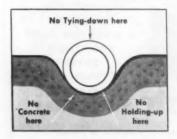
P.O. Box 119

Wichita Falls, Texas



Transite Air Duct keeps installed costs low!

Strong! Corrosion-resistant! Transite lets you eliminate costly concrete encasement



Transite® offers you many advantages—many ways to save when you install modern slab-in-grade perimeter heating and air-conditioning systems.

Of all its money-saving advantages, many contractors say its strength and corrosion resistance are most important, because they make costly concrete encasement unnecessary. Both time and concrete are saved as your men position Transite directly on the prepared bottom. There's no need for special supports—and because Transite won't float—no need for anchoring.

All your men do is position duct and pour concrete.

Transite installs still faster because fittings can be made quickly, easily, right on the job—or ordered factorymade to your requirements.

To homeowners, Transite Air Duct offers permanent, trouble-free service. Made of asbestos-cement, it is fully corrosion-resistant inside and out. It won't flake or flap down to impede air flow . . . will never rot or give off odor.

Let us send you a free copy of Transite Air Duct booklet, TR-144A. Address Johns-Manville, Box 14, New York 16, N. Y. In Canada, 565 Lakeshore Road East, Port Credit, Ont.



Johns-Manville TRANSITE AIR DUCT

neys Inc. in West Virginia, Kentucky, Ohio and western Pennsylvania. Other new representatives handling package chimneys for the firm are William H. Webster Jr., Norwalk, Va., who will cover Virginia, North and South Carolina and Maryland, and Stanley K. Grady, Abington, Pa., who will serve eastern Pennsylvania, Delaware and parts of Maryland. Walter B. Stamberger Jr., Rutherford, N.J., will represent the firm in New York State and northern New Jersey.

- THE SCHOOLER-GORMAN Co., 1224 W. 9th St., Kansas City, Mo., as a sales representative for the Chelsea Fan and Blower Co. Territory to be served includes Kansas, Oklahoma and western Missouri. B. S. Forester, St. Louis, will cover parts of Missouri and Illinois. Other new representatives are H. R. Onarecker & Co., Houston, Tex., who will serve the Texas territory and Pete Bach Electric, 1233 N. W. 12th Ave., Portland, Ore., who will cover Washington, Oregon, Idaho and Montana.
- RICHARD NELSON SHELBY as a sales representative for Mueller Climatrol residential heating and cooling equipment in the Cincinnati area. Mr. Shelby's territory includes parts of Ohio, Indiana, Kentucky, Virginia and West Virginia, Claude L. Newhart will rep-

resent the firm in the Florida territory, which comprises parts of Georgia and Alabama as well as the state of Florida, Forrest W. Wilson will serve as a salesman in the Milwaukee area.

- ▶ WESLEY W. WRIGHT as a sales engineer for The Trane Co. Other new sales engineers are D. N. Mc-Minn, C. J. Witt and R. L. Herron who have been assigned to the Houston, Indianapolis and Tulsa sales offices, respectively.
- ▶ CHARLES KANNAPELL as a representative for American Air Filter Co.'s Washington branch. Mr. Kannapell formerly worked out of the company's Louisville branch office. Collins Hamblen has been transferred to the New York City branch office from the Washington branch office. Charles Jacobs goes to New York City from the Minneapolis branch. Fred M. Erichson, New Orleans, has expanded his representation of the company's products to include Herman Nelson heating and ventilating products.
- ▶ JOHN FALLE as a district sales representative for the Berger Furnace Div. of the Burnham Corp. Mr. Falle, with headquarters in Syracuse, will cover northeastern New York. John Delaney will handle sales in New Jersey and eastern Pennsylvania. Covering the New England territory for the division is L. H. Nussbaum Associates.

For the best buy . . . **BUY WHITNEY** tools

NO. 8-C CLIP PUNCH

Capacity three thicknesses of 20 gage steel. Length 18½". Weight 8 lbs. Special tool for fastening in duct and sheet metal

Special tool for fastening seams in duct and sheet metal work. No second operation or hammering down required.

CHICAGO STEEL SLITTING SHEAR

For slitting long sheets and for cutting steel bars, band iron, etc. Main frame steel casting with offset for clearance in cutting long sheets. Capacity 3/16" x 2" bars, 10 gage sheets. Equipped with adjustable hold down.



636 RACE STREET ROCKFORD, ILLINOIS

W. A. WHITNEY MFG. CO.

Hard to SODER —

Matels

Aluminum, Cast Iron Stainless Steel

Galvanized Metals





9302 BERENICE, SCHILLER PARK, ILL.



14 models and sizes . . . installs in 30 minutes . . . fits any straight or sloping bonnet furnace.

AUTOMATIC HUMIDIFIER CO. • Cedar Falls, Iowa



"NIGHT-OWL"

call backs got you down?

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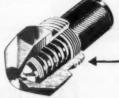




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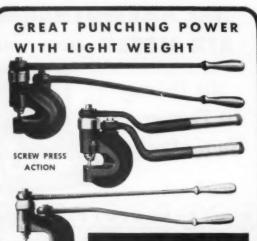
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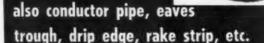
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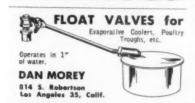
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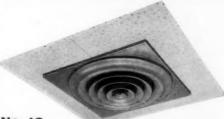
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